

Vol. II.]

[No. 24.

THE

DIETETIC REFORMER

AND

Vegetarian Messenger.

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OCTOBER, 1866.

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“FIX UPON THAT COURSE OF LIFE WHICH IS BEST; CUSTOM WILL RENDER IT THE MOST DELIGHTFUL.”

LONDON :

JOB CAUDWELL, 335, STRAND.

MANCHESTER: WILLIAM BREMNER, MARKET STREET.

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THE VEGETARIAN SOCIETY.

ESTABLISHED A.D. 1847.

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THE OBJECTS of the Society are, to induce habits of Abstinence from the Flesh of Animals as Food, by the dissemination of information upon the subject by means of tracts, essays, and lectures, proving the many advantages of a physical, intellectual, and moral character, resulting from *Vegetarian habits of Diet*; and thus, to secure, through the association, example, and efforts of its Members, the adoption of a principle which will tend essentially to true civilisation, to universal brotherhood, and to the increase of human happiness generally.

CONSTITUTION.—The Society is constituted of a President, a Treasurer, an Executive Committee, a Secretary, Local Secretaries, Foreign Corresponding Secretaries, and an unlimited number of Members in the United Kingdom, and Honorary Members abroad, above the age of fourteen years, who have subscribed to the Declaration of the Society.

DECLARATION.—"I hereby declare that I have Abstained from the *Flesh of Animals as Food*, for *One Month*, and upwards; and that I desire to become a Member of the VEGETARIAN SOCIETY; and to co-operate with that Body in promulgating the knowledge of the advantages of a *Vegetarian Diet*."

☞ All inquiries, and applications for information, should be addressed to the SECRETARY of the VEGETARIAN SOCIETY, 12, King Street, Salford, Manchester.



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Vegetarian Messenger.



Nº XXIV.]

OCTOBER, 1866.

THE ANNUAL MEETING.

AFTER mature deliberation, the Executive Committee have decided to hold the next Annual Meeting in Manchester; and if it should be deemed desirable to meet next year in another place, arrangements will require to be made to assemble earlier in the season, which will enable our friends to have their summer vacations at the same period. In view of the difficulties attending a long journey when autumn is far advanced, and of the fact that several influential friends pressed for the next meeting to be again held in Manchester, the Executive believe they have consulted the wishes and convenience of most of the members who desire to be present, by the decision above stated.

From the promises already received, it appears probable an influential and interesting meeting will be gathered, and we beg to urge our friends, especially those who live within a reasonable distance, to be present at the reunion.

The ANNUAL MEETING will be held on October 25th, in the HALL OF THE CO-OPERATIVE SOCIETY, Downing-street, Ardwick. Cards for Tea and Public Meeting, one shilling each. Tea will be served at 6.30.

A Business Meeting, for the election of officers, &c., will be held at four o'clock in an ante-room of the same Hall.

The Secretary desires that friends who may purpose attending from a distance will communicate their intention to him, that he may make suitable arrangements for their accommodation. He also desires to remind members who have not yet sent their subscriptions that it will facilitate the duties of the Executive if they will forward the same without delay, in order that the liabilities of the year may be met.

AN ANALYSIS OF THE LIST OF THE MEMBERS OF THE VEGETARIAN SOCIETY.

THE writer of the ensuing analysis has taken great pains to secure accuracy, as far as the vagueness of some of the returns would admit of it. The corrections and additions printed in the *Dietetic Reformer* of last July are included; the names of

those living abroad being erased. The announcement on the cover of the printed list, that it contains only "the names of members living in England," is an error, for the names of those living in Scotland and Ireland are also included.

NAMES ON THE BOOKS.

Males.	Females.	Total.	Per centage of Males.	Percentage of Females.
543	158	701	77.5	22.5

Note.—It is desirable for members to give their names in full, as initials alone do not indicate the sex.

OCCUPATIONS.

Occupations.	No.	Occupations.	No.	Per-centage.
Gentlemen	15	Gentlemen	15	2.1
Clerical	8	} Professional	79	11.3
Medical	10			
Scholastic.....	22			
Lecturers	5			
Other Professions	34	} Clerks, &c.	53	7.5
Clerks, &c.	53			
Manufacturers	13	} Commercial	164	23.4
Merchants	17			
Tradesmen and Agents	134	} Farmers	7	1.
Farmers	7			
Overlookers.....	9	} Artisans	174	24.8
Artisans	146			
Labourers and Servants	19	} Unclassified	21	3.
Unclassified.....	21			
No Returns.....	188	No Returns.....	188	26.9
Totals.....	701		701	100.

Note.—We here find all classes of society well represented. Intelligence accepts Vegetarianism as true and adapted to mental cultivation, while Labour demonstrates its sufficiency for supporting physical health and exercise. "No returns" includes most of the female members, and probably also some gentlemen of independent means.

THE MEDICAL PROFESSION.

Name.	Profession.	Vegetarian Experience.		Address.
		Yrs.	Mo.	
Lambe, Lacon W.	Physician	60	3	Hereford.
Marples, T. D.	Surgeon	38	3	Bolsover.
Viettinghoff, Graf Von.....	Physician	17	3	London.
Thomas, Henry	Physician	16	3	Chester.
Mc. Kay, David, jun.	Medical Student	13	11	Glasgow.
Lawrie, William Forbes ...	Physician	13	9	Dunstable.
Mansel, John	Surgeon and Apothecary	13	3	
Pearce, Ch. Th.	Physician	11	1	
Toulson, James A. H.	Surgeon's Assistant	10	4	
Bates, Tom	Medical Student	4	9	Great Malvern.

Note.—Vegetarianism seems to wear very well in the medical profession, for the average experience of these gentlemen is 19 years, 10 months.

LENGTH OF VEGETARIAN EXPERIENCE.—A. EXCLUDING “WHOLE LIVES.”

Sex.	No. of Returns.	Total Experience.		Average for each.	
		Yrs.	Mo.	Yrs.	Mo.
Males.....	504	7,534	0	14	11
Females	124	2,062	11	16	7
Total.....	628	9,596	11	15	3
Whole lives					
No returns					
On books					

Note.—Observe female persistency in Vegetarianism.

B. INCLUDING “WHOLE LIVES.”

Sex.	No. of Returns.	Total Experience.		Average for each.	
		Yrs.	Mo.	Yrs.	Mo.
Male	516	7,774	0	15	0
Female	150	2,582	11	17	2
Total	666	10,356	11	15	6
No returns					
On books					

Note.—The united experience of all the members whose names are on the books may be safely set down at 10,000 years, and the average for each at 15 years! Vegetarianism is no mere temporary whim of the eccentric few. The “Encyclopædia Britannica” would have us believe that our diet is dangerous alike to life, health, and activity. Can it think so itself any longer?

C. “WHOLE LIFE” EXPERIENCE.

Age not specified. Minimum 14 years.

Sex.	No.
Males	12
Females	26
Total.....	38

Note.—Note again the remarkable steadfastness of the ladies. The average experience for each of the above is estimated at 20 years; the minimum age, by our rules of admission, being 14 years.

D. TABULATED EXPERIENCES.—EXCLUDING “WHOLE LIVES.”

Length of Experience.	No.
Less than 5 years	25
From 5 to 10 years	63
From 10 to 15	242
From 15 to 20	229
From 20 to 30	40
From 30 to 40	12
From 40 to 50	7
Over 50 years	10

Number of returns..... 628

Note.—Supposing the 35 cases of “no return” to be “under 5 years,” only 9 per cent of the number on the books have had a smaller experience than 5 years. This shows that our harvest of new members have been very trifling of late years.

LOCALITY.		
Places.		No. of Members.
<i>England</i> :—Manchester and Salford	74	
London.....	51	
Liverpool.....	14	
Rawtenstall	14	
Birmingham	13	
Leeds	10	
Sheffield	10	
Bath	7	
Barnsley	6	
Accrington	5	
Durham.....	5	
York.....	5	
Other places	177	
	—	391
<i>Wales</i>		4
<i>Scotland</i> :—Glasgow	17	
Edinburgh	4	
Other places	20	
	—	41
<i>Ireland</i> :—Dublin	1	
Other places	4	
	—	5
	Number of returns.....	441
	No address given.....	260
	On books.....	701

Note.—Distributing the cases of “no address given” proportionately amongst the four countries, we shall have—

England	622 Members.
Wales	6 ”
Scotland	66 ”
Ireland.....	7 ”

On books..... 701

London, Sept. 20, 1866.

WILLIAM FREESTON.

WHAT FOOD TO EAT: DR. IRELAND'S REPLY.

[We have allowed Dr. Ireland the last word, contrary to the usage of editors, but in accordance with the laws of fair debate. The points of divergence we now leave to our intelligent readers, whilst we gladly acknowledge the large extent of candid support accorded us by Dr. Ireland.—EDS. *D. R.*]

It would afford me more pleasure to side with you as an ally than meet you as an opponent; but, as I am convinced of the correctness of the views put forth in my pamphlet “What Food to Eat,” it is my duty neither to abandon, nor appear to abandon, the ground I have taken. Two points seem to me requiring explanation. My argument was that that the carnivora were systematically destroyed in the country round about Walton Hall, and resorted to Mr. Waterton’s preserve for protection, as wild animals fly from places where they are hunted to retreats where they are unmolested. Hence beasts of prey were abnormally numerous, just as rogues are in a sanctuary, and were thus able to keep down the frugivora; but this does not prove that over a wide-cultivated country, peopled by Vegetarians, they would find the same facilities for increase. “The destruction of nests and the breaking up of land” would tell much more against the preservation of such animals as hawks and owls than against that of partridges and hares.

You ask me "why one pound of beef per day should be injurious and not one pound of bread?" "How the ninth ounce becomes hurtful and not the seventh? If it were gluttony that would be easily stated." Perhaps it would not be stated so easily. A glutton might reply: you allow me forty-seven rough weight of nourishment, and state all beyond that as gluttony; tell me why forty-seven is beneficial and forty-eight hurtful; and if forty-eight cannot be proved to be excessive, then let me hear why forty-nine is so? My estimate, like all other estimates of the kind, was merely approximative. I cannot tell why eight ounces of flesh ought to be the limit any more than why seven grains of iodide of potassium should be given three times a-day more than eight grains three times a-day, or twenty-one grains a-day in four doses. The human intellect is not fine enough to decide such questions. But it is necessary to fix some limit, if one means to act. The limit which I have ventured to fix was made after a good number of observations, and after comparing many diet scales. But it is impossible to state it otherwise than in a dogmatic form without re-producing all the facts on which it is based. It will not be easy to show that any bad effects flow from the use of flesh or fish in the guarded proportions allowed by me; and most writers on Dietetics place the limit higher.

Animal food, in large quantities, has a tendency to produce certain diseases, such as uric acid/calculus, gout, plethora, hypertrophy of the heart; and medical science explains—how? Flesh meat increases the production of urea and of uric acid; and, when uric acid becomes too abundant in the system, it is deposited in the joints (causing these chalky concretions characteristic of gout) and in the bladder, in the form of uric acid/gravel, and calculus. Hence, half a pound of meat might be safely eaten by one predisposed to such complaints, the uric acid duly carried off, and no disease follow. But the moment a certain limit was passed, the excretory organs would fail to carry off the superfluity of uric acid and urates, or the watery constituents of the urine fail to hold them in solution, and disease result. The same explanation may suffice for plethora and hypertrophy of the heart. Animal food increases the force of the heart, and increases the number of the corpuscles of the blood. It has a tendency to over-excite the pulse and overfill the vessels. This increases the rapidity of the circulation. Now, the pulse beat can rise or fall within certain limits, say between sixty and seventy-five, and no harm result; but above this it cannot safely go. Hence, too much flesh meat ought not to be taken. You say, till the line of safety is clearly traced, I prefer to live on vegetable food. Well, so be it. You will do fully as well, probably better, without flesh. Whether men can do as well without milk will not be so readily conceded; but, since whole nations like the Japanese do without, it is clearly not indispensable.* The experiments of Dr. Guy at Millbank, go to prove the same result; and it would be well that we had more of them. Experiments upon men whose habits can be controlled, and who can be made to perform, day after day, a measured quantity of work upon a measured quantity of food, are the very data we need.

In the meantime all experience proves that men can be as strong and healthy without flesh meat as with it; but all experience proves that men prefer food pleasant to the palate to food pleasant to the health. Most men cannot and many will not distinguish between their real wants and the sensual abuse of them. Let us be cautious of talking about instinctive tendencies and instinctive cravings, unless we are prepared to admit an instinctive craving for tobacco, or opium, or gin,

* "Of milk and butter they (the Japanese) know nothing."—*Kaempfer's History of Japan*, Vol. I. p. 132.

Kaempfer's

or Indian hemp. As far as science teaches us, people are everywhere abandoning a nutritious form of diet for one which is less so, though more pleasing to the palate. White bread is preferred to brown; potatoes to maize. The working classes in the towns will rather eat inferior and diseased meat than healthy vegetable food; and it is worthy of note that all the chemical calculations of the nutritive virtues of meat are drawn from the very best pieces that can be cut from the carcass, which often contain double the amount of nourishment of the other parts.

It is argued in Macculloch's "Political Economy" that it is an advantage for the working classes to use the dearest kind of food; because when a famine comes they can have recourse to cheaper products. In other words, the more expensive and extravagant labourers are in their food the better for them as a class. Macculloch was not a man of any originality; and, in the present case, this idea may be found better stated by Malthus, who, in his well-known "Essay on Population," advances that the wages of the labourer are always regulated by the prices of the staple food which he uses; for, if from the fewness of hands in the market, or the increase of capital seeking employment, the wages of labour are increased, the number of marriages will also increase, more children will be born and reared, and the price of labour will fall, from the increased number of competitors. There is little doubt that this is the real relation between an exuberant population and a cheap vegetable diet. Doubleday has failed to establish his opinion that a vegetable diet renders men more prolific; and, it is worthy of remark, that Marchand, the author of "*L'Influence du Régime Végétal et du Régime Animal*," held the very contrary opinion: that an animal diet increased human fecundity. Throughout this speculation Malthus evidently assumes that the labouring classes, if they get good wages, will either spend them upon more tasty food or upon keeping a wife and children.

It is with pain that a reformer must admit there is some truth in the assumption. In the great manufacturing and trading towns, higher wages seem to have outrun higher wants; and the increased facilities of production and transport do not seem to bring much which increases the happiness and real wellbeing of the people, and often bring gross and sensual habits along with them. It is suggestive enough that lower wages do not produce a lower rate of mortality even among the ill-paid agricultural labourers of England. On the contrary, in four counties, where wages average nine and threepence a week, the number of deaths is fewer than in the northern shires of England, where the mean wages of rural labourers are fourteen shillings and fivepence (*Journal of Statistical Society*, 1864, p. 185). One thing is clear, that we cannot hope for any improvement in the condition of the labouring classes, unless they are willing to spend their increased earnings on something better than articles of food more pleasing to the palate, or in beer or tobacco. This is no improvement whatever. If the operatives in the towns are willing to employ their wages profitably, they can have many of the means of health and comfort which they at present want, as well as have something to meet a famine or provide for old age; otherwise the efforts of Dietetic Reformers to teach them the cheapest food might end in keeping large numbers of men on the brink of starvation.

But if we are to aim at a stage of prosperity, where, as Macaulay anticipated, country labourers will be as little used to dine without meat as they now are on rye bread, it may be safely said that they never will get any higher than this Elysium of carnivora, if they ever arrive so far; for the moment that prices of meat rise so high—as they have done in England and France—that men find it profitable to turn

even the poorest arable land into grass parks, numbers of the agricultural classes must be thrown out of employment, and thus, while the price of bread is raised, the price of labour must fall. By using an increased quantity of animal food men are doing their best to diminish the reward of labour; to depopulate the country; and to make the condition of the lower classes more and more intolerable. Malthus was perfectly aware of this, and evidently believed that the lower classes must always live mainly on vegetable food. His remarks, consequently, only apply to the different kinds and qualities of grain and potatoes.

Medical men ought, therefore, to be cautious in asserting that butchers' meat is necessary either for the maintenance of mental or physical labour, and abstain from misleading the public by making statements which they cannot defend, and which they have no intention of defending.

W. W. IRELAND.

AN ARGUMENT FOR TOTAL ABSTINENCE FROM THE FLESH OF ANIMALS.

O mortals! aye from shedding blood abstain,
Nor taint your bodies with a food profane.—*Ovid.*

INTRODUCTION.

Importance of Diet.—The extreme importance of a correct regimen in cases of disease is well known, but there is a very general impression that in health it does not much matter. Now disease, like any other event, can only ensue when all its necessary conditions have been complied with, and a little reflection will show that it is carelessness in health which gradually fulfils those conditions and renders the approach of disease possible. Food is the material of which that wonderful structure—the living body—is made. Our flesh, bones, and blood—nay our very hearts and brains—are made up of the solids we eat, the liquids we drink, and the gases we breathe. While man is careful to select the best iron, and wood, and stone wherewith to make his goods and chattels, and while he is anxious to feed his horses cattle, sheep, and dogs according to the very best principles—is he to build up *himself* of any materials that chance may throw in his way and habit or whim suggest? If he do so he may rest assured that he will receive his reward—the hospital or the premature grave.

Proneness of Man to Error.—The limited desires and capabilities of the lower animals, with the safeguard of instinct, leave them little room for error. But man is infinitely restless—ever crying out for something new; and his wonderful ingenuity (which has been confounded with his reason) enables him to multiply and gratify his whims to an almost unlimited extent. But not with impunity. In spite of the wonderful law of adaptability, which is an attempt on the part of nature to avert the consequences of error though at the risk of seeming to sanction it, a glance at society will show that in some way or other the laws of nature must have been grossly violated. The high rate of mortality, especially amongst infants; the very short average duration of human life; the small proportion of aged people living; the prevalence of disease in ever increasing forms and complications—in spite of our vast array of doctors, dentists, and druggists, with all their appliances; these are everyday facts which cry with a loud voice to him “who hath ears to hear”—urging our return to the beautiful simplicity of nature whose benevolent laws we have so grossly set at nought.

Vegetarianism.—As a step in the right direction, the members of the Vegetarian Society, which was established in 1847—a similar society being formed in the United States in 1849—urge *total abstinence from the flesh of animals*—from fish flesh, and fowl. They do not agitate for the disuse of animal substances—milk, butter, cheese, and eggs; though some individual members confess to a certain degree of inconsistency in using them, and look upon fruit—ripe and uncooked—as the normal food of man. Still less do they recommend a diet of *greens*—which is what many ignorantly understand by Vegetarianism. This notion is but a gross caricature—a sort of “Aunt Sally” set up by “Punch” and his followers as a butt for their random shots. No one was ever known either to recommend or practise such a diet, and it does not deserve a moment’s serious consideration. There is no doubt that errors with regard to food are a most fruitful source of evil, and as total abstinence from the flesh of animals is perfectly practical, and would be a substantial instalment of dietetic reform—the Vegetarian movement at present has only that simple object in view. This is a good in itself, without the least reference to any possible ulterior aims, and the Vegetarian Society stakes its existence on the practicability and wisdom of the step it advocates.

Primâ Facie Objections to Animal Food.—But it will be urged, and with reason, that all reformers are bound to show that what they propose to remove *is* evil, and that the alternative they suggest is preferable. The principal objections to the present omnivorous habits of society relate: (1) To the animals slaughtered; (2) To those engaged in killing the animals and preparing the carcasses; (3) To those who consume the flesh. In the first place the animals slaughtered for food are gentle and harmless, and their destruction on so gigantic a scale is utterly unjustifiable except on the score of necessity. In the second place—all the modes of killing the victims and preparing their bodies for the cook are exceedingly revolting and repugnant to our better and purer feelings and tastes. That so many thousands of our fellow countrymen should spend their working lives amidst the filth and degradation of the slaughter-house, and be trained to it from their youth—is of itself a monstrous evil only to be justified, like the preceding, on the ground of necessity. In the third place—the innate impurity and proneness to decay of even what is called “prime” meat surround the dinner table with so many dangers (civilised palates being rather a snare than a safeguard) that it is highly impolitic—unless it can be shown that there is no better alternative—to conform to omnivorous habits and customs.

Attempts to Evade these Objections.—The first impulse of the most impulsive or least candid omnivorians is to evade the above objections. With regard to the first count they ask—“what were the animals made for if they are not to be eaten?” “would you have the country over-run with these animals?” or “what should we do for leather?” and some even go so far as to say that we do the animals a kindness by killing them, thereby preserving them from the *chance* of dying a miserable and lingering death; and that the system of alternate breeding and slaying increases, on the whole, the amount of animal enjoyment. With regard to the second count it is urged that a man is not necessarily low and degraded, or even unkind, because he happens to be a butcher. Well, there is no rule without exceptions, and no one would assert that every individual butcher must of necessity be below the level of his fellow men. Nevertheless, while giving every drover and butcher the benefit of the doubt, it must be admitted by every candid mind that the general tendency of the slaughter-house and cattle-market is of necessity decidedly degrading. But it is said that these men gradually get accustomed to their work. Precisely so;

their tastes and feelings get gradually toned down to a lower level, and the force of habit petrifies the mischief thus done to their nature. With regard to the third count in the indictment it is urged that vegetables are liable to disease and decay as well as the flesh of animals. Of course they are; but who was ever deceived by a bad orange, apple, potato, or even nut? Can the same be said of beef, mutton, pork, &c.? Surely no candid person would for a moment deny that vegetable substances resist decay very much better than the flesh of animals placed in similar conditions. These *prima facie* objections to flesh eating have been thus dwelt upon because until they have been refuted by vegetarians and disclaimed, at least in part, by their opponents, the omnivorians, there is no room for agitation, and the Vegetarian Society has no grounds for raising its banner of dietetic reform.

Positions taken up by our Opponents.—The opponents of Vegetarianism while admitting that the habit of flesh-eating is in some respects a serious evil, take up various grounds of defence. Some assert that in spite of its revolting circumstances this habit is in accordance with our physical constitution, and especially the structure and arrangement of the teeth. Others refuse to consult anatomy at all, as man is a creature of such wonderful reason, that he is quite independent of the laws and analogies observable in the structure of ordinary animals. Others, while confessing that a non-carnivorous diet seems to be natural to man, maintain that the artificial and unnatural conditions of civilised life necessitate stimulating food and drink, and that even his natural diet under the circumstances would expose him to debility, scrofula, consumption, &c., &c. Others, while admitting that a Vegetarian diet is natural to man's constitution, and capable of supporting the highest amount of bodily strength, even in the artificial state of society, urge that flesh-food is necessary to give man that spirit of dominion suitable to his rank as the "lord of creation." Lastly, some opponents of Vegetarianism entrench themselves behind a few adverse texts of Scripture, and spurn all advances from the side of nature, science, or experience. They will scarcely even consent to weigh opposite texts of Scripture against their own. Such persons are not in a fit state of mind to discuss any question.

The Burden of Proof.—Finding every other position untenable, some opponents turn round upon us and challenge us to prove that a Vegetarian diet is practically any better than theirs. Now, Vegetarians do not shirk this challenge, but they would point out that it is an unfair attempt on the part of our opponents, to shift the burden of proof from their own shoulders and to lay it upon us. Admitting the *prima facie* evils of flesh-eating—or any one of them—they must accept the responsibility of proving either that we *cannot* or *ought not* to do without it.

The Vegetarian Line of Battle.—Seeing that "our friends the enemy" will not accede to an unconditional surrender, and confess that omnivorism is contrary to nature, science, and experience, however pleasant to a perverted palate, we Vegetarians must draw ourselves up in battle array and march to the attack. We are prepared to maintain the following twelve propositions (amongst others) respecting the opposed systems of diet, viz. :—

THAT AN OMNIVOROUS DIET—

1. Is entirely unnecessary.
2. Is cruel.
3. Is repulsive and degrading.
4. Is unsuitable.
5. Is impure.
6. Lays the foundation of disease.
7. Tends to produce drunkenness, &c.
8. Shortens life.
9. Blunts the intellect.
10. Excites the lower passions.
11. Deadens our higher nature.
12. Is wasteful.

WHILE A NON-CARNIVOROUS DIET—

- Is amply sufficient.
- Is innocent.
- Is enticing.
- Is adapted to his structure.
- Is pure.
- Conduces to health.
- Conduces to self-restraint.
- Conduces to longevity.
- Quickens the intellect.
- Soothes the lower passions.
- Tends to spiritualise and elevate.
- Is economical.

Having in this somewhat lengthy introduction taken a glance at the battle-field and the disposition of the opposing forces, we are perhaps better prepared for entering into the more intricate details of the contest.

(To be continued.)

A CONTINENTAL TOUR; AND ASCENT OF MONT BLANC.

BY A VEGETARIAN TEETOTALLER.

THIS year I was absent from England twenty-seven days, viz., from May 31st till June 27th, and in that time took a look at France, Belgium, Prussia, Nassau, Switzerland, &c. You ask for my "reflections and observations." To an Englishman travelling some thousands of miles by continental railroads, as I did, the great subdivision of the land into small holdings is one of the most striking features. I am told that this state of things prevails to such an extent in Switzerland, that of the 485,000 householders, 465,000 possess landed property. This system of having many small holdings seems to have advantages as well as disadvantages, compared with the present English one of having much larger and fewer holdings. Among its advantages may be mentioned the certainty of a much larger proportion of interested labour being brought to bear on a given area of land. Among its disadvantages there is the difficulty, and in many cases the impossibility, of using the best modern labour-saving machinery. Though I usually looked out at the carriage windows attentively, I do not recollect seeing a horserake, or a reaping or mowing machine during the journey. May co-operative agriculture, which would combine the greatest concentration of interested labour with the widest diffusion of its rewards, soon spread its benefits throughout all the world!

At Cologne, and in other parts of the continent, before the actual fighting between the Prussians and the Austrians had begun, I heard a great deal said against the Prussian prime minister, Count Bismarck, to whose conduct the war seemed to be attributed. As the world seems to worship success, he is probably very popular now, where his name was hated three months ago. The new railroad bridge over the Rhine, at Cologne, is a handsome structure of four spans, each span 350 feet. It was built by a Prussian contractor, and is a little lower down than the old bridge of boats. I am told that many thousands of pounds are spent every year in repairing the beautiful Cologne cathedral. In that city, on June 1st, I heard a German political song sung. The audience seemed much amused, and joined in the chorus, which was to the effect, I was told, that "too many cooks spoil the broth"—referring to the numerous small duchies and principalities of Germany. It seems people do not like to belong to insignificant nations; and certainly to be able to say one is an Englishman, an American, a Frenchman, a Russian, or a Prussian, is to feel like being somebody, in whatever part of the world one may be; but to have to say one belongs to a nation that only occupies about as much territory as a British parish, must seem like being next to nobody.

Near Ems, in the Duchy of Nassau, I saw careful and laborious cultivation of the soil. An old man and a youth were busy planting crou—*a favourite German vegetable*—on a steep hill-side, facing the north. The old man loosened the top soil with a hand mattock, and the youth, following in the same line, loosened the subsoil with his hand mattock. As they got to the end of each row with their mattocks, they walked back to the other end and began the planting, carefully scooping out a hole in the soil within a few inches of each plant, and placing in it a basinful of the strong liquid manure they had carried on their backs up the steep hill from their tank at home. On the opposite side of the Ems valley, facing the south, there are valuable vineyards, of the kind which produces white, as well as of the kind which produces red wine. Ems is a fashionable watering place,

frequented by English people and others, for the purpose of bathing in and drinking the nasty waters for which it is famous. Here I had an opportunity of watching the proceedings of one of the public gambling establishments, which are conducted by government at several of the German watering places. The place where the business of such an establishment is carried on is usually a handsome building, pleasantly and conveniently placed, called the "Kursaal," and containing many spacious apartments, some occupied by the busy gamblers of both sexes, and some being used as reading-rooms, well stocked with newspapers of various languages. Good music is often given, and as admission is free—winning, in the long run, a certainty to the proprietors of "Rouge et Noire" and "Roulette" tables—and dupes with money plentiful, no doubt the fools' tax here levied is a source of great revenue to the government, while the cost of levying it is also great.

At Heidelberg I saw the celebrated "tun," said to be the largest wine cask in the world. The University men seem to be fond of beer, and (like other German students, I believe) of duelling. I managed to see one bloody fight, in which one of the combatants received five and the other seven sword cuts.

Strasbourg Cathedral has a spire 474 feet above the pavement, 24 feet higher than the great pyramid, and a clock, in which a brazen cock crows and flaps its wings amusingly every hour.

At Mulhouse, which I have heard called the Manchester of France, I explored some of the neat model dwellings, cooking and washing houses for the work-people, and some of the schools of industry, where boys and young men are taught weaving, as well as chemistry, carpenters' work, gymnastics, and other things. On my remarking to a Basle carriage driver that all the people leaving a church at six in the morning were women, he spoke in favour of a division of labour, by which "women do the praying, men do the business."

I am told that Mont Blanc is 15,570 feet—nearly three miles above the level of the sea. I made the ascent of this mountain on the 21st and 22nd of June. Mine was the first ascent that had been made this season. I left Chamounix, from which village the ascent is usually made, about 11 a.m., with an American gentleman, two guides and a porter who were to go to the top, and two extra porters who were to help to carry the provisions, firewood, and clothing as far as our destination for the first night—the rocks called the "Grands-Mulets, in the region of perpetual snow, where the guides have built a large wooden hut. A good height up, but before we got into the snow, we caught some goats and milked them, some of my companions drinking their milk mixed with brandy. In the course of the afternoon we got into the snow, and found it softened by the sun, and therefore tiresome to walk in. We crossed the Glacier des Boissons, with its hills and valleys of ice and treacherous snow-covered chasms, pretty high up. When we had left the haunts of men and all traces of animal life behind us, one of our loaves fell from the porter's shoulders and rolled over a precipice. This loss was a severe blow, but we went on. About 8 p.m. the snow was removed from one of the windows of the wooden hut, and I went head foremost into the arms of a man who had got in before me. A stove that smoked hatefully was lighted, but my feet had got wet and cold in the snow, and I was sleepless that night. On the morning of June 22nd we ascended from the Grands-Mulets' hut to the top of Mont Blanc. At 2 a.m. we put cotton round our toes to keep off frost-bite, and put on warm leggings and mittens, and green spectacles and veils to keep off the snow-glare. At 2 30 a.m. our party of five, viz., my American friend and myself, with two

guides and a porter, left the hut, tied together with about thirteen feet of strong rope to each of us. We first went down a very steep place by lantern light, and then ascended steadily over the hard-frozen snow till we got to an ice-valley, called the Grand Plateau, where we refreshed ourselves. At two very steep places the leading guide at the time had to cut hundreds of footholds for us with a snow hatchet, so that we all had to stand still while they were being cut—a few seconds at every step. The cold was considerable, though the day was still. My American friend remained with one of the guides within about half an hour's walk of the top, while I went on to the top with the other guide and the porter. Within a few seconds of our arrival on the top, a cannon was fired at Chamounix in honour of the event, according to custom. I was tired and sleepy. We stayed on the top from 11 30 a.m. till mid-day. The view of the surrounding mountains was extensive and beautiful, though not free from clouds. Between mid-day and 8 p.m. we descended to Chamounix, where I had the pleasure of being much catechised by British and American tourists about our mountain walk. We had several times slid in the soft snow in the sitting posture, tied together, down heights of hundreds or thousands of feet. It was amusing to find that we had been watched through telescopes from Chamounix during a great part of our two days' journey. As the ascent of Mont Blanc requires great exertion, it is remarkable that many people accomplish it safely who are neither Vegetarians nor Teetotallers. The drive by carriage road from Chamounix to Geneva is very beautiful.

In Paris, on my way home, I heard "Screaming Theresa" sing in the open air, and saw the handsome building that is being prepared for the Great Exhibition to be held there next year. If there be a royal road to learning, probably it may be found in travelling.

W. L.

The writer of the foregoing has very modestly told a simple yet interesting tale, embodying some useful information. The following letter, referring to the ascent of Mont Blanc, and written by a personal friend of the tourist, was addressed to the secretary of the *Alliance News*, where it appeared:—

BEEF AND BRANDY v. BREAD AND WATER.

Dear Sir,—Thinking the following incident may be interesting to the readers of the *Alliance News*, and especially so to our noble friend Dr. Lees, I now send it you. Early this season there met by accident at Chamouny two gentlemen, the one an American, and the other an Englishman. The American was a beef eater and a moderate brandy drinker, and in every respect physically very much the stronger man of the two. The Englishman was both a Vegetarian and a teetotaller. Both agreed to ascend Mont Blanc together, and being the first ascent of the season great interest was awakened in the little village, and that interest was deepened when the personal habits of both gentlemen became known. Having procured two guides and a porter, they started on their journey, and kept both together until, within twenty minutes of the top of the mountain, the beef eater and brandy drinker was compelled by exhaustion to give in and lie down. When the villagers of Chamouny observed that only one of the travellers had reached the top of the mountain, great interest was awakened, and strong betting began among them as to whether it was the moderate-drinking American or the total-abstaining Englishman. On their descent it was soon perceived that the water-drinker had the victory. What will our alcoholic-stimulating medical friends say to this? And I have much pleasure in informing you that the English gentleman was none other than William Lawson, Esq., younger brother to our excellent and honourable friend, Wilfrid Lawson, Esq., late M.P. for Carlisle.—I am, dear sir, yours respectfully,

ROBERT SIMPSON.

The above letter called forth the following interesting testimony from another

Alpine tourist, again illustrating the fact that a Vegetarian diet is most favourable to enduring toil :—

TEETOTALISM AND STRENGTH.

Dear Sir,—A few weeks since a paragraph appeared in the *Alliance News*, to the effect that a teetotaller and non-teetotaller had tried their strength in climbing Mont Blanc, with decided advantages to the former. My own experience in mountaineering has always gone to the same issue, *i.e.*, *cæteris paribus*, the teetotaller will win in all cases of enduring toil. This midsummer I and seven of my boys have had a month's run in Switzerland. We were on our feet 21 days, and of these the boys would only take one of absolute rest, and then most of us took a stroll. The least distance we walked in one day was 15 miles, the greatest about 36 miles. Altogether we walked over about 500 miles, and fourteen times we reached heights varying from 7,000 to 12,000 feet, ten of these involving considerable work on snow and ice. The boys were so eager to see, that they would not rest. The party was almost wholly teetotal—two were vegetarians, and these undoubtedly outstripped all the others in power, being always the most eager to go on, and often saving a fourth of time in making a stiff climb.

THOMAS WYLES.

Allesley Park College, Aug. 29, 1866.

THE DIETARY OF WALES.

At the Welsh National Eisteddfod, celebrated at Chester last month, the important questions of Temperance and Dietetics were not altogether overlooked. A paper, prepared by Mrs. Wightman, authoress of "Haste to the Rescue," was read, entitled "Prevention of Pauperism, Crime, Disease and Death." We regret that no report of the contents of this paper was in the published proceedings that have met our eye; but, from what we know of the excellent lady from whose pen it proceeded, we have no doubt but that it contained much suggestive material, and we yet hope to see it published. A grand temperance demonstration fitly closed, or rather supplemented, the Eisteddfod proceedings, and was presided over by George Cruickshank, Esq., and was addressed by Mr. Wilfrid Lawson, Mr. W. H. Darby, Mr. W. Lester, Mr. J. H. Raper, and other earnest advocates of the Permissive Bill. We, however, wish to call more particular attention to a paper read by Dr. Edward Smith, F.R.S., who was directed by the Privy Council, in the year 1863, to institute inquiries into the dietary of the low-fed population of Wales. Some of the results of these inquiries were embodied in the paper read by Dr. Smith at the Eisteddfod gathering. We give our readers the entire of the essay, as published in the *Chester Chronicle* of September 8th, 1866. It will be remarked how small a quantity of animal food is consumed by the rural population of South Wales, $8\frac{1}{2}$ ounces of butchers' meat per week being the extent for each family, or $2\frac{1}{2}$ ounces per each adult.—Eds. *D.R.*

DIETARY IN WALES.

In the year 1863 I was directed by the Privy Council to institute inquiries into the dietary of the low fed populations of Wales, and in order to effect this, I visited the houses of the peasantry, and conversed with the house wife, in the interior districts of South Wales, in parts of North Wales, and in the Isle of Anglesey. The information was obtained in the most precise manner, and includes the amounts of various kinds of food which were consumed weekly, with the cost of it, the modes of cooking, and the number of members and income of the family. Great differences in the amount and kinds of food were observed in the several parts of the principality, but as a general expression the poorest dietary was found in South Wales, the most abundant in Anglesey, and the most varied in North Wales; and in the latter the dietary was equal to that found amongst the same class in the best agricultural districts in England. The following is a short summary of the frequency with which the most important kinds of food were consumed in the several districts, with the average quantity

eaten by each adult weekly—two children under 12 years being regarded as one adult. The members of the class of breadstuffs which were consumed were bread, flour, oatmeal, barley, peas, and rice. Bread, ready baked, was not purchased at all by the cases in Anglesey, and in only two cases in South Wales was it a principal member of the class, whilst in only three cases, or 6 per cent, was it eaten at all. There is no standard weight of the loaf, neither is it sold at a variable per lb., but the cost is invariable, whilst the weight of bread in the loaf varies with the market and the dealer. When baked at home it was sometimes baked in loaves, and at others in flat cakes over the open fire, called plank bread. The former was more common when there was an oven, and was generally preferred, since the bread in the latter case was apt to drive off the gas produced in fermentation, and to render the cakes sad. Having stated that the wheaten flour was used by 80 per cent in South Wales and by all the cases in North Wales, the doctor proceeded to state that oatmeal was produced by every case in Anglesey, and by 60 per cent in North, and 53 per cent in South Wales. In the majority of cases it was used to make broth, *sucan*, or *budram*. Barley was formerly used more largely than at the present day, one 20 per cent in South Wales and more in North Wales (except at farm houses) using it. A mixture of rye and barley is not unfrequently ground into meal for bread. Peas were eaten by only 8 per cent of the population. Rice, he added, is somewhat largely eaten. Every family obtains it in Anglesey, and 60 per cent of those in North and 40 per cent of those in South Wales, so that it is consumed by 51 per cent of the whole. In a few of the cases it was largely used, but in the whole series the quantity was less than 1 lb. per family weekly. When used largely, it was generally by the poorest families, and when potatoes were scarce. The total quantity of breadstuffs reckoned as bread, which was consumed by these populations, was very large, namely, 18 $\frac{3}{4}$ lbs. in Anglesey, 14 $\frac{3}{4}$ lbs. in North Wales, and 13 lbs. in South Wales per adult weekly, or 14 lbs. per adult throughout the whole country. Potatoes and green vegetables are very generally consumed throughout Wales, and in Anglesey and North Wales the use of them was universal. My inquiries in South Wales were made before the potato crop had been gathered, so that at that period less than 90 per cent ate them. The average quantity which was consumed was much the largest in Anglesey, where potatoes were eaten twice a day, and amounted to 16 $\frac{1}{2}$ lbs. per adult weekly, whilst in North and South Wales it was 4 and 5 $\frac{1}{2}$ lbs. respectively. The quantity per family in Anglesey was 53 $\frac{3}{4}$ lbs. weekly; and in both North and South Wales a larger quantity was eaten than that recorded when they were plentiful. I found, however, one family who had not eaten them for two years, and several who had not obtained any fresh vegetables for a month at a time, and for many months, without any ill effects having followed. Mr. Phillips at Newcastle Emlyn, however, stated that during the first year of the potato disease, scurvy appeared among his patients, notwithstanding that fresh baked bread was eaten daily. In many instances, the use of green vegetables as a separate dish was restricted to Sunday; but leeks and herbs were used daily in South Wales in the broths, to which I shall again refer. I particularly inquired if the quantity of flour or other breadstuff was materially diminished when potatoes were plentiful, and learnt that the difference was so much as 5 lbs., 6 lbs., and 8 lbs. per family. Hence it was shown that potatoes are never regarded there as a principal article of food, but when they are abundant they add to the total nutriment obtained by the people. It should be added, that usually the gardens attached to the cottages are larger than those in England, many are small fields, and are cultivated by the wife alone. Sugars are eaten universally in Anglesey and North Wales, and by 90 per cent of the families in South Wales. The total average was 92 per cent. The use of treacle was limited to 40 per cent, and was more frequent in Anglesey and North Wales. The average quantity of sugar consumed was 12 $\frac{3}{4}$ ounces in Anglesey, 8 $\frac{1}{2}$ ounces in North Wales, and 6 ounces in South Wales per adult weekly, and on the whole it was 7 $\frac{1}{2}$ ounces. Fats were eaten by 92 per cent of all the families combined, and with the exact frequency in the three different divisions that has been recorded in reference to sugar. In only North Wales were dripping, lard, or suet eaten, and in 92 per cent of the whole butter was the sole separated fat consumed. The quantity varied from 1 to 3 lbs. per week, and in all families less butter was eaten with fine flour than with barley bread. The average quantity consumed was very small in South Wales, viz., 3 ounces per adult weekly, whilst in North Wales it was 11 $\frac{1}{4}$ ounces, and in Anglesey 9 $\frac{1}{4}$ ounces. In Pembrokeshire, the labourers at the farm-houses are limited to one or two ounces per day. The total average was nearly 6 ounces per adult weekly. It is very singular that lard should not be eaten by the farm labourer in South Wales, but that it should be reserved for sharpening tools or to be sold. Meat or bacon was eaten by every family in Anglesey and North Wales, and by nearly 80 per cent of those in South Wales. The total average frequency with which one kind was eaten was 84 per cent, and both were eaten by the same family in 30 per cent. Butchers' meat was eaten by

30 per cent, and in South Wales by as few as 12 per cent. The total quantity of butchers' meat consumed per family weekly was only $8\frac{1}{2}$ ounces, or per adult $2\frac{1}{2}$ ounces; and so small was the quantity eaten in South Wales that with the exception of a family near to Swansea, only $1\frac{1}{2}$ lbs. was eaten by the whole 32 families weekly. Moreover these cases were such as obtained about 12 lbs. of the neck of veal in the six months, consisting of at least 50 per cent of bone. In one case meat was obtained once a week, in another once a month, and in another not for months, in another one shilling's worth in four months, and in another not sixpence worth in five years, and *the great majority of the cases never tasted it*. Men living at farm-houses usually obtained hung beef, viz., beef salted and dried by hanging it to the roof of the house, as will be stated when referring to the meals. In the Isle of Anglesey, and in various parts of Wales, the only meat obtained in farm-houses was such as was killed in the winter and salted for use the following summer, thus following the now disused customs of our forefathers in England. In a similar manner the families in South Wales, who were able to purchase meat, usually bought a sheep and salted it, as occurs in the Western Highlands of Scotland. Bacon was eaten by every family in Anglesey and North Wales, and by 75 per cent of those in South Wales. The total average quantity was 27 ounces per family, and $7\frac{1}{4}$ ounces per adult weekly; but the quantity per adult weekly in the three divisions—Anglesey, North Wales, and South Wales was 8 ounces, 9 ounces, and $6\frac{1}{2}$ ounces. In Anglesey and North Wales a pig was usually fed, whilst it was rare in South Wales; but in many of these cases the people were obliged to sell it. In one case bacon was only eaten on Sundays, one case had $\frac{1}{2}$ lb. in a month, another $1\frac{1}{2}$ lb. in six months, and another ate none for many weeks. The total quantity of meat and bacon consumed per family weekly was nearly $2\frac{1}{4}$ lbs., and per adult 10 ounces. The doctor then proceeded to speak of herrings, milk, cheese, eggs, tea, coffee, and beer; remarking in reference to the beverages that tea was drunk universally in Anglesey and North Wales, and by 84 per cent of the families of South Wales, yielding a general average of 90 per cent. The quantity was very large in Anglesey and North Wales, so much as $3\frac{3}{4}$ ounces and $3\frac{1}{2}$ ounces per family, and 4 ounces per adult. The total average was a little over 2 ounces per family, and $\frac{1}{2}$ ounce per adult. It is usually (always in South Wales) taken without milk. Its use is increasing in South Wales, so that the farm labourers' families may by it be divided into two not very unequal classes, those who supplant milk by tea, and those who do not take tea. Coffee was used by only 40 per cent of the families, and in some cases was taken by the labourer to his work in the fields. *Beer was most rarely drunk in any part of the Principality*. Such are the details of the dieting in Anglesey and Wales, and I have entered into them separately for each division to show that much difference exists. The total weekly cost of the food per family was in Anglesey 14s. 4d., in North Wales 15s. 3d., and in South Wales 8s. $5\frac{1}{2}$ d., whilst per adult it was 4s. $4\frac{3}{4}$ d., 3s. 8d., and 2s. $3\frac{1}{4}$ d., in their order. The total average was 12s. 8d. per family, and 3s. $5\frac{1}{4}$ d. per adult. The quantity of carbon and nitrogen contained in the food for each computed adult was in Anglesey 60,784 grains and 2,521 grains; in North Wales 45,613 grains and 1,765 grains; and in South Wales 38,675 grains and 1,806 grains. All, but particularly the first, were above the average of the community, and the total average was 48,354 grains of carbon, and 2,031 grains of nitrogen per adult weekly (when the free hydrogen in the food is calculated and reckoned as carbon the daily amount is 2,750 grains, and the total carbon becomes 51,104 grains daily.) The amount of carbon and nitrogen obtained for each 1s. was in South Wales 16,875 grains and 787 grains, in Anglesey 13,825 grains and 562 grains, and in North Wales 12,439 grains and 492 grains, an order differing from that of the total quantity of nutriment obtained, and showing how much more economically the money was spent by the poorer community. The total average per adult weekly was 14,713 grains of carbon and 614 grains of nitrogen for each 1s. expended. Time does not permit me to cite here at length the grounds for the practical conclusions which I desire to draw from the inquiry, since they involve the large questions of digestibility and nutritive value of foods, and I must be content with simply stating them. 1. Milk is largely used in these dietaries, and since it is a most nutritive and easily digested food it is of the highest value to the peasantry. Its use in South Wales is however much less than in the other parts of the principality, and having regard to the general poverty of the dietary there, every effort should be made to increase the supply. The state of health and freedom from scrofular disease is usually in proportion to the amount of milk obtained, and by no means can the rich more readily and effectively improve the sanitary condition of the poor than by aiding them to keep a cow, or by otherwise helping them to obtain milk. It should also be known that buttermilk, which is so largely used by this class in Wales, has much nutritive value, and whatever can be spared by the farmers should be given to the peasantry rather than to pigs and dogs. 2. Whilst cheap cheese is of the greatest value in the absence or deficient supply of meat, its inferior digestibility renders it

desirable to supplant it as far as possible by milk and meat. 3. As tea and coffee offer scarcely any nutriment and yet cost much money, it is most desirable that their use should not be extended among the poorest class until a larger income warrants the expenditure of money upon luxuries. To introduce tea largely, would be to lower the value of the dietary for nutrition by substituting it for milk, which is of the greatest value. There can be no doubt that under existing circumstances in South Wales the degree of health and strength which is now enjoyed, is to be attributed to the use of the most economical foods, and as the health and strength is not equal to those found in the richer districts of North Wales, the first desideratum is to enable the populations to obtain a larger quantity of the most nutritive foods. 4. The tendency which exists to supplant barley bread by wheaten bread is in the right direction. The latter is more nutritive and easier of digestion than the former, and with the low price of wheaten flour the difference in cost is proportionably less than was formerly the case. Moreover, with great poverty, butter and other foods which would render the coarser food palatable to women and children, can scarcely be obtained, and white bread may, if needful, be eaten without them. The rapid elevation of the peasantry in Wales, which is now proceeding, is matter for sincere congratulation, and it may not be doubted that every year will bring with it an addition to the necessaries and luxuries of the people."

Selected Articles.

ANIMAL FORCE AND ANIMAL FOOD.

BY J. BROUGHTON, B.S.C.

UNTIL the last twenty years, it was generally held that the phenomena of animal life presented a totally different set of conditions to those occurring among lifeless matter. The invariability of the action of the various forces which are constantly producing changes in the inanimate world, was supposed to be completely altered by the presence of life. This alteration in the ordinary sequence of physical causes and effects was attributed to the operation of an occult power, to which the name of vital force was given. This agent was accordingly supposed to exert a sort of directive agency, by means of which the ordinary operations of the forces of matter were suspended or modified, and effects were produced of a different character to those observed out of animate bodies. It was also to this agent that the power of voluntary motion, and the exertion of internal and external mechanical forces, was more particularly ascribed, this power of voluntary motion being the property which forms the main distinction between an animal and a plant. It is not, indeed, strange, that this remarkable faculty we possess of making our movements obey our will, or of exerting upon external objects the force of our bodies, should have furnished a subject for the wonder of all thoughtful minds, and that a special cause should have been assumed by way of explanation. Nor, indeed, is the wonder at all diminished at the present time by our better understanding of the true causes, and of the modes in which they operate.

Of late years, the special character of the vital force has found but little support from the laborious results of those engaged in investigating the processes that take place in the bodies of animals. Indeed, it is apparent at first sight that the physical forces affect living bodies just as they do everything else. The weight of all the parts shows the influence of the force of gravity; and the laws of hydrodynamics, of heat, and of light, find rather favourable illustrations among the various internal phenomena. The same is found to be equally the case in the chemical processes of digestion and assimilation, which as far as they are known, do not essentially differ from the similar processes that can be carried on without the body. Again, the bodies of animals have often been compared to furnaces, of which food forms the fuel. The latter has to be supplied at tolerably regular intervals, varying according to the nature of the animal, and the construction of his internal apparatus of assimilation, and is there made to undergo various changes which finally result in its combustion. Notwithstanding that this comparison is a sufficiently crude and inaccurate one, it expresses the gross results tolerably correctly. As far as the final result of the various metamorphoses of the food are concerned, it is really

consumed in the body. Both in the fuel of the furnace and the food of the body, the carbon is combined with oxygen to form carbonic acid, and with the hydrogen to form water; while in both cases some of the fuel escapes consumption, and is expelled along with the incombustible salts. But, on the other hand, while the furnace allows the nitrogen of the fuel to escape in an uncombined form, the body excretes it in the form of urea, a crystalline substance peculiar to the animal body. If we push the analogy still further, and determine the heat produced by this process of internal oxidation, we find the comparison still to hold good. Not only is heat given out in both cases, but it is actually the same in amount. The experiments of Dulong and Depretz have shown that the same amount of heat is given out from the body of a living animal as its food would produce when submitted to combustion in oxygen.

In 1842, Liebig, by considering the nature of the tissues and the various phenomena of nutrition, respiration, and motion occurring therein, and applying the known laws of chemistry to their explanation, showed the comparative simplicity which really underlies the complexity of most physiological processes. In his great work on "Animal Chemistry," he showed the identity in chemical composition between the muscular substance and the nitrogenous constituents of the food. He also, as is well known, divides the various kinds of food into two great classes, namely, those which contain nitrogen, and serve for the building up of the muscular tissues, and those destitute of nitrogen, as starch, fat, &c., whose use is limited to the production of animal heat. These two classes he named flesh-formers and heat-givers respectively. In the same work he considers fully the subject of animal motion. Respecting this he teaches that the source of the muscular force of animals is the combustion of the living muscles by means of the oxygen conveyed to them by the blood, and that consequently every motion, however slight, is the cause of the destruction of a certain amount of muscle, and the liberation of its (so called) vital force.*

The final product of this destruction of the muscular substance is urea, which passes into the blood, and is extracted from thence by the kidneys. Therefore, if the above explanation be true, the amount of urea given out should indicate exactly how much muscle is consumed; and a man working hard ought to produce much more urea than one at rest, since, by reason of the great expenditure of force, a larger amount of muscle is burnt. The experimental proof of this was, however, very difficult to give, since the amount of urea excreted also varies, to a certain extent, with the amount of "flesh-formers" supplied in the diet. Notwithstanding this failure of direct evidence, the explanation of Liebig has been generally held to be the true one, and up to the present time the source of animal force has been believed to be the oxidation of the living muscles.

But of late years the subject of the muscular movements of animals has been placed in a new light by the now well-known relations of the forces of heat and mechanical energy. By the doctrine of the conservation of force, we know that, whatever may be the proximate source of the force of the muscles, it must be attended with a disappearance of heat from the body. It is from considerations founded on this equivalency of heat and mechanical force that much of our more recently acquired knowledge of animal dynamics is derived. Thus Helmholtz has shown that, considered simply in the light of a machine for the conversion of heat into force, the human body surpasses the best steam-engine that has ever been constructed. Of the total heat given out by the combustion of the food, a man can make a fifth available in the form of actual work, while it has never been found possible to construct a steam-engine that could utilize more than a ninth of the energy of the fuel burnt under the boiler.

But in addition to this external work, the body has constantly to perform a vast amount of work in order to sustain the life. There is the blood to be kept circulating and urged through the lungs and capillaries; the chest and diaphragm have to be raised for the purpose of breathing; digestion has to be carried on and the body kept erect—all these consuming energy. It has been determined that the heart, contracting at the rate of seventy-five pulsations to the minute during the twenty-four hours, performs an amount of work equivalent to raising a hundred-weight to the height of 4,463 feet. The work of breathing has been estimated by Fick to be

* "Animal Chemistry," second edition, p. 220, *et. seq.*

about equal to raising the same weight to the height of 703 feet. The other sources of internal work have not yet been estimated, but it is quite evident that the amount of labour the laziest of us perform is very great.

It is indeed of the greatest importance to physiology that the real source of muscular power should be discovered. If it be derived, as Liebig and most subsequent physiologists have believed, from the living muscles, then it naturally follows that the main food of a working man should be those substances which alone can produce muscle, and should consist of flesh formers. The question is to determine whether the muscle is merely the apparatus by which animal motion is produced, or whether it furnishes both the apparatus and the force to work it. The difficulties in the way of a resolution of this question are very considerable, and it is only lately that it has been attacked by direct experiment. The recent researches of Dr E. Smith and the Rev. Professor Houghton appear, however, to throw considerable doubt on the received theory; and within the last few months a crucial experiment has been made in Switzerland by Drs. Fick and Wislicenus, professors of physiology and chemistry at Zurich University. Still more lately, additional experimental data have been furnished by Professor Frankland, who gave, on the 8th of June last, a complete discussion of the whole question at the Royal Institution.

In order to solve this problem by experiment, there are three things necessary to be determined. First, the amount of force or energy generated by the oxidation of a given amount of muscle in the body; secondly, the amount of mechanical force exercised by the muscles of the body during a given time; thirdly, the quantity of muscle oxidised in the body during the same time.

Now it follows that if the amount of mechanical force exercised by the muscles be greater than the amount of their substance oxidised could possibly furnish, then it is evident that the force of the muscles is not exclusively derived from their own substance.

When muscle is consumed in the body, the whole of its nitrogen appears in the urine, principally in the form of urea. Hence it follows that the amount of energy derived from the oxidation of muscle in the body will be expressed by the heat of combustion of the muscle itself, *minus* the heat of combustion of that amount of urea which the muscle would furnish when consumed in the body. This difference of heats was determined by Frankland, who found that to convert one gramme of dry muscle into urea, as much heat was evolved as would, when converted into mechanical force, be sufficient to raise a hundred-weight to the height of 132 feet.

The second of the required data—viz., the actual work performed in a given time by the muscles—was ingeniously determined by Fick and Wislicenus by the elevation of the body itself. For this purpose they ascended the Faulhorn, a mountain of the Bernese Alps, 6,560 feet high, near the lake of Brienz, whose regular slopes rendered it well adapted for their experiment. The height of the mountain, multiplied by the weight of the body of each experimenter, gave the amount of external work performed, and to this was added the estimated internal work of the circulation and respiration.

The third datum—the amount of muscle consumed—was given as a maximum by the amount of nitrogen excreted by the kidneys. This amount being determined by analysis, the amount of muscle is readily calculated, since every 15.6 parts of nitrogen indicate 100 parts of muscle destroyed. The excreted nitrogen was determined in the experiments of Fick and Wislicenus with every possible care; and in order that there might be no source of loss, the amount excreted for six hours after the ascent was taken into account.

As a final result of their investigations, they found that the muscle consumed, even with the most liberal allowance for all possible chance of error, would not account for the work performed. Even under the most favourable interpretation, and neglecting all the internal and external work that could not be accurately measured, *it was found that the combustion of the muscles themselves would not account for a third of the work performed.*

Some time ago Dr. E. Smith made some experiments of a similar nature upon prisoners working at the treadmill, which, rightly interpreted, point to the same result. The treadmill is found to be an extremely convenient instrument for physiological investigations of this kind, since it permits the accurate registration of the work performed, and also insures regularity of performance. The experi-

ments were made upon four prisoners, who made a total ascent of 1.432 miles a day, an amount of work far less than that taken for amusement by mountain tourists. The actual muscle consumed being determined in the same manner as in the latter experiment of the German professors, it was found that the combustion of the muscle was sufficient to account for but three-fifths of the work performed, although the labour was comparatively light. It was also a significant fact that the amount of urea given out was not increased by the exercise. This was in agreement with previous experiments of Draper, Speck, and Lehmann, and, taken in connection with the foregoing, points to the conclusion that the oxidation of the muscle contributes at the utmost but a very small proportion of the muscular force. The destruction of the muscle is really due to those processes of change and death, to which nearly all the tissues of the body are (as is well known) successively subject.

Other experiments made by Haughton on military prisoners at short-drill also show the great excess of the work actually performed over that which could be furnished by the destruction of muscle, but enough has been adduced to show that we must look elsewhere for the source of that power of which the muscles are but the agents.

Whence comes, then, this strange muscular force which we exert at will, and are able to combine and direct in so wonderful a manner? If it be not furnished by the muscles, where is the source of its supply? To this inquiry the answer is clear and definite. It is the food, as assimilated in the blood, and the combustion of the various articles of diet, both those hitherto called heat-givers, as well as the flesh-formers, that furnish the muscles with their power to contract. This important result is clearly shown by the researches of Dr. E. Smith, who finds the combustion of *carbon* in the body varies according to the amount of work the body performs. This fact, indicated by the amount of carbonic acid exhaled, is evident from the following table:—

	Carbonic Acid evolved per hour.
During sleep	19.2 grammes.
Before sleep, but after lying for several hours.....	23.0 "
Walking, at two miles per hour	73.6 "
Walking, at three miles per hour	100.4 "
Upon the treadmill, ascending one-third mile per hour	175.0 "

Here, then, in the energy stored up in the carbon and hydrogen of the food, we find the origin of the work of the field labourer and the navvy—the power that raises the skylark, and that which enables the squirrel to leap from tree to tree. The combustible and the oxygen co-exist side by side in the blood, and are thus carried through the muscles which furnish the instrument. The nervous agent (so to speak) fires the train, or pulls the trigger, and the still energy of the combustible immediately takes the active form of motion.

These views of the origin of muscular force suggest profound changes in the diet necessary to persons engaged in bodily labour. It is known, by the experiments of Savory on rats, that the purely albuminous constituents of food, in the absence of "heat-givers," will enable the body to perform all its necessary internal work; but it is very improbable that such is to any extent the function of nitrogenous food. The use of the latter is doubtless (as shown long ago by Liebig), that of providing fresh muscular tissue to replace that which is constantly undergoing waste and decay. It is estimated that this would be furnished by $3\frac{3}{4}$ ounces of dry albumen every twenty-four hours, and this amount being supplied, the remainder of the food necessary to supply the body with its working fuel may be either of the starchy or fatty classes. In fact, articles of food, such as animal flesh are under positive disadvantages as working foods, since they are *incompletely* burnt in the body, and consequently all the energy they contain is not available. The urea they produced though a waste product is really a combustible substance. It is on this account also that gelatin, from its richness in nitrogen, is theoretically the least economical. But the fats, sugar, etc., are completely consumed in the body, and even more perfectly than would happen were they thrown into an ordinary fire.

Frankland has determined the amount of force capable of being given out by various articles of food, by noting the rise of temperature produced by deflagrating known weights with chlorate of potash under water. From the results thus

obtained, the following table was calculated, showing the amount of force developed by one gramme of various foods when consumed *in the body*. This is expressed in metre-kilogrammes, or the force necessary to raise a kilogramme (2.4 lbs.) to the height of a meter (3.28 feet). The food is in its ordinary condition, and the percentage of water it contains is appended.

Actual energy developed by various articles of food when consumed in the body :

Name of Food.	Metre-kilogrammes.	Per Centage of Water.	Name of Food.	Metre-kilogrammes.	Per Centage of Water.
Cheshire cheese...	1908	24	Lean beef	623	70.5
Bread	1201	44	Beef fat	4113	—
Milk	266	87	White of egg.....	266	86.3
Potatoes	482	73	Isinglass.....	1700	—
Apples	315	82	Hard-boiled egg ..	1030	62.9
Oatmeal	1798	—	Carrots	243	86
Peameal	1765	—	Cabbage	198	88.5
Flour	1797	—	Cocoa nibs	3149	—
Rice.....	1760	—	Cod-liver oil	4127	—
Arrowroot	1901	—	Lump sugar	1800	—
Mackerel flesh ...	738	70.5	Butter.....	3331	—

The above numbers show, in a very striking degree, the advantages, as a source of animal force, that the dry, farinaceous cereals possess over the animal foods. This is, however, principally owing to the amount of water the latter contain; for when dry, they have somewhat the advantage over the cereals. But it will be observed that both are enormously surpassed by the fats and substances which contain fat, such as cocoa or cheese. The superiority of cod-liver oil as a source of force to every other substance is also very remarkable, and justifies its great use in medicine. Indeed, the condensed form of nourishment afforded by the fats has long been known. The chamois hunters, who have to undergo continued and severe exertion among the peaks and glaciers of the Alps, are accustomed to take with them as provisions nothing but fat and sugar. They say that these substances are more nourishing than meat, for they have learnt by experience the rich supply of force-producing matter these substances afford.

It will be observed that some vegetables also have very low force value, on account of the amount of water they contain. Indeed, apples, cabbage, &c., almost as much deserve the name of drinks as milk or beer. But the different values of the various articles of diet becomes more evident when they are stated in an economical form, with the cost attached, as in the following table :—

Weight and cost of various articles of food required to be consumed in the body, in order to raise 140 pounds to the height of 10,000 feet.

External work = $\frac{1}{5}$ of actual energy.

Name of Food.	Weight required. lbs.	Price per lb. s. d.	Cost. s. d.
Cheshire Cheese.....	1.07	0 10	0 11
Bread	1.77	0 2	0 3 $\frac{1}{2}$
Milk	8 02	5d. per quart	1 3 $\frac{1}{2}$
Potatoes	4.43	0 1	0 4 $\frac{1}{2}$
Apples.....	6.77	0 11 $\frac{3}{4}$	0 10 $\frac{3}{4}$
Oatmeal	1.05	0 2 $\frac{3}{4}$	0 3
Peameal	1.21	0 3 $\frac{1}{4}$	0 4
Flour	1.19	0 2 $\frac{3}{4}$	0 3 $\frac{1}{2}$
Rice.....	1.27	0 4	0 5
Mackerel.....	2.89	0 8	1 11 $\frac{1}{4}$
Whiting	6.56	1 4	8 9 $\frac{1}{4}$
Lean Steak.....	3.42	1 0	3 5 $\frac{1}{4}$
Beef Fat	0.52	0 10	0 5 $\frac{3}{4}$
Lean Ham	2.6	1 6	4 1
Butter	0.64	1 6	0 11 $\frac{1}{2}$
Arrowroot	1.12	1 0	1 1 $\frac{1}{2}$
White of Egg.....	8.02	0 6	4 0 $\frac{1}{4}$
Isinglass.....	1.25	16 0	20 1

Name of Food.	Weight required. lbs.	Price per lb. s. d.	Cost. s. d.
Hard-boiled Egg	2.07	0 6½	1 1½
Carrots	8.78	0 1½	1 1¼
Cabbage	10.77	0 1	0 10¾
Cocoa Nibs	0.67	1 6	0 11¼
Sugar	1.15	0 6	0 7
Bass's Ale	9 bottles	10d. per bot.	7 6 ?
Guinness' Stout	6½ „	10d. „ „	5 2½ ?

The position occupied by oatmeal as a cheap source of force shows that its extensive use appears thus founded on sound economical principles. Certainly few foods can compete with it in respect to its capability of affording support to the bodily functions at a minimum of expense. The comparative small-force value of animal foods, combined with their high price, render them (according to the foregoing table) most uneconomical articles of diet. It should, however, be remembered, the relative digestibility of the various foods is a condition of considerable importance, not only on dietetic grounds, but also from purely mechanical considerations. It has been mentioned above that the labour of digestion is itself a considerable source of internal work, though we are ignorant of its amount. It may therefore frequently happen that the ready digestibility of an article of food may more than compensate for its otherwise inferior value as a source of force.—*Intellectual Observer*, July, 1866.

VEGETABLES.

THE English, as a rule, are essentially a carnivorous people. With the exception of those poetically sensitive persons who are called vegetarians, Englishmen seldom or never eat vegetables except as a vehicle for animal food. They are, perhaps, justified in this by the fact that if there is a branch of cookery of which they are more ignorant than any other, it is the art of cooking vegetables. Those English people who by education, travel, and superior intelligence, have learnt what to eat and how to eat, deplore that in the bosom of their families they never can get those succulent leguminous preparations which are obtainable on the other side of the Channel, and, perhaps, at some select establishments, clubs, and hotels in town. Of course, I do not speak of the happy few whose means enable them to keep a *chef* professor of the art to direct their kitchen; I refer to those people who must be content to leave the preparation of their food in the hands of the British female cook, whose modes of dressing vegetables, especially greens and the like, are as uninviting, not to use a stronger word, to the eye as they are insipid to the palate. Nevertheless, I have no doubt there are people whose prejudice and ignorance are such that they would prefer a misshapen mass of vegetable matter well squeezed together, to a dish of greens properly dressed; but as there may be others who would, if they could, have their vegetables decently cooked, I will give you my views on the subject of cooking most vegetables, beginning with some of the humblest.

Brocoli-greens.—Arrange them in nice little bundles like asparagus, and tie them with string, then put them into a saucepan with plenty of boiling water, salt *quantum suff.*, and a piece of soda. When cooked (let them not be over done) take the bundles carefully out of the water, and put them to drain on a colander near the fire, so as to keep them warm. At the time of serving, remove the strings, send up your greens as you would asparagus, and you will find that their appearance and taste are immensely improved, if you have been in the habit of eating them *à l'Anglaise*. Over them, or in a sauce-boat, may be served either plain melted butter or any other sauce *ejusdem farinae* which taste may suggest.

Turnip-tops.—This by some accounted most vulgar greenmeat, can be made to assume a very fashionable taste and appearance if treated as follows: Boil thoroughly, with plenty of water, salt and soda in due proportions, drain and pass through a hair sieve. Melt a piece of butter, to which add a little flour and the pulp of your turnip-tops; stir on the fire a few minutes, adding a little milk or cream and a little

broth or stock, with pepper and grated nutmeg to taste. When a nice consistency, not too thick, dress on a dish as you would spinach, and serve with fried sippets of bread round it. If properly cooked this dish has a better colour than spinach, and a very pleasant nutty bitter taste, which I sometimes think preferable, for a change at any rate, to spinach.

Sorrel should be treated exactly as above, only it should not be so thick as spinach, but have the consistency more of a thick sauce or *purée*. It is generally not served by itself, but under a piece of stewed veal or veal cutlets. The pleasant acidity of a *purée* of sorrel goes very well with veal, and is made more attractive by the addition of one or two yolks of egg stirred into it with the milk or cream; in this case however, it is not necessary to put in any broth or stock. A *purée* of sorrel, made rather thick, may be served by itself, with poached or fried eggs disposed upon it, or simply hard boiled eggs cut into quarters. By using spinach instead of sorrel you have another very good dish.

Spinach is prepared by the same process, exactly as the turnip-tops, besides which there are several other vegetables which, similarly treated, are a very good substitute for it. The leaves of the white-beet, *Poirée* in French, and even those of the common beetroot, *Betterave*, also what the French call *Cresson de Fontaine*, a kind of water-cress, make very good spinach. The young shoots of nettles may also be used, but these I have not tried. A skilful cook will produce very artistic *purées* or dishes of the nature of spinach by the judicious combination of spinach, sorrel, white-beet, water-cress, chervil, and lettuce. A head of the latter thrown in with spinach or sorrel when it is put to boil in the first instance, is always an improvement to either.

Before I proceed further, I would wish to impress strongly upon the minds of operators that all vegetables cannot be too carefully cleaned and washed, and that every leaf or speck the least tainted or discoloured must be thrown aside. The sieve to be used should be a strong horsehair one, wire sieves are apt to impart a bad taste, especially in the case of vegetables containing strong acids, like sorrel. Most vegetables, both fresh and dried, can be treated by this sieve process, being flavoured by judicious doses of spices, and made more succulent by the addition of butter, a little stock, and milk or cream according to the nature of the vegetables in hand. A piece of ham or bacon may be boiled with them, and the flavour may be modified by the addition of vegetables having a strong flavour, like onions, shallots, and garlic, or the combination of several vegetables, as I have mentioned above. The French call these preparations *purées* made of a thin consistency, they are served as soups with sippets of fried bread, and are called *Pottage à la purée* of whatever it may be. And they are also served as sauce to all sorts of meats, but for this purpose they must be made thicker. Lastly, in many cases they are made thicker still and are eaten as vegetables themselves. When you use vegetables which do not contain much starch, this should be supplied by flour, otherwise when the *purée* comes to be put in the soup plates the vegetable fibres will separate from the liquid and sink to the bottom of the plate. For the thicker forms of *purée* the addition of flour is not of so much importance.

The following may be taken as the common form to make all sorts of *purées*. Boil the vegetables with salt, and if they be green ones a little soda. When thoroughly done drain them well and pass through a hair sieve. Melt a piece of butter in a saucepan, add a little flour, mix it well and throw in the vegetable pulp, stir and proceed to flavour with pepper and powdered spices, or the spices in a muslin bag may be boiled with the vegetables in the first instance, and at that stage also must be put in the onions, &c., if they be required. The last part of the process consists in moistening the *purée* with broth, stock, milk, or cream, until it is of the required consistency, and then it is ready to be served. A *purée* for a soup is improved by having a small part of fresh butter put into it at the time of serving. The inside of a French roll added to the vegetables before they are passed through the sieve may be used instead of flour at the next stage of the process. A little sugar may be advantageously added to certain *purées*, such as peas, Jerusalem artichokes, and onions. *Purées* can be made with the following vegetables besides those mentioned at the beginning of this paper, or any combination of them: Asparagus, artichokes, broad beans, carrots, cabbage, celery, haricot beans, Jerusalem artichokes, mushrooms, onions, parsnips, peas, potatoes, tomatoes, turnips, vegetable marrow, and

also with dried peas, beans, broad beans, lentils, and chesnuts. In the case of artichokes, chesnuts, and mushrooms the common form given above must be modified as follows : Having boiled the artichokes the tender part of the leaves and the bottoms freed of what we call the *foin* (hay) should be separated from the rest and alone passed through the sieve (in this case a wire sieve would be fatal). Chesnuts, stripped of their first or outer skin, should be boiled with salt, a bay leaf or two, and some coriander seeds ; when done the inner skin should be removed, and then proceed as usual.

The Green Artichoke does not appear in a general way upon English tables. English cookery-books, with one or two exceptions, when they do not ignore it altogether, describe but one way of cooking this vegetable—viz., plain boiling. Now, a plain-boiled artichoke has merits when accompanied by a cunningly-devised sauce, having just enough condiment to relieve without killing the flavour of the artichoke ; but if the artichoke should be young and fresh gathered, it is still better eaten raw with a nice *sauce poivrade*—i.e., a judicious mixture of oil, vinegar, pepper, and salt, and perhaps a little mustard. However, the process of eating an artichoke, either raw or plainly boiled is such that many people would think it tedious, and perhaps not very elegant ; wherefore the professors of the art of cookery have invented other ways of dressing that vegetable, the chief point of which consists in dressing only the eatable part of each artichoke, so that it may be eaten with a fork like carrots or potatoes. The process of removing from an artichoke the uneatable part is a very easy one when you know it ; but the simple word “trim” is hardly sufficient to explain it to the uninitiated. This is all the explanation given in the one or two English cookery books which describe this mode of dressing artichokes. I will now tell you what is meant by trimming an artichoke in this sense. Cut off the stalk close ; turn the artichoke bottom upwards, and cut it in four six, or eight quarters as you would an orange ; take each quarter and remove with a knife the embryo stamens which are at the core ; then cut off all the leaves, leaving only an eighth of an inch of the outside one ; this must be done in a slanting direction, for as the leaves approach the core there is more to eat on them. Lastly pare the outside of each quarter neatly. All these operations must be done expeditiously, and as each quarter is done it must be put into a basin of cold water, with the whole juice of a lemon squeezed in it. When the artichokes are all trimmed they should be taken out of the basin and thrown into a saucepan full of boiling water, with salt and some lemon juice (half a lemon), and when they are nearly cooked, say in fifteen or twenty minutes, they should be drained, and put back again into the basin of cold water and lemon juice. They are now ready for dressing, and ten minutes before serving, having drained and dried them in a cloth, you can proceed to dress them in any of the following forms : 1. Flour or dip each piece in batter, and fry a light colour, serving either alone or with other fried things. 2. Make a sauce with flour, butter, water, pepper, and salt ; toss the pieces of artichokes in it till warmed, and add, just before sending up to table, one or two yokes of eggs and a lemon juice. 3. Fry some chopped onion in butter, and put in the pieces of artichoke ; toss them in the saucepan for ten minutes, and serve with the juice of a lemon, adding a little grated nutmeg, and salt and pepper if necessary. To be dressed in this way they should be boiled previously for ten minutes only. 4. Dispose the pieces of artichoke on a well-buttered silver dish, strew plentifully over them a mixture of bread crumbs and finely-minced mushrooms and parsley, with a very little chopped shallot or garlic ; add pepper and salt, a little more butter, and put the dish into the oven for ten minutes. Brown the top with a salamander and serve. Previous boiling is not imperative, but when dispensed with the dish should remain longer in the oven, say about half an hour. Oil may be used instead of butter. 5. Artichokes are also used as *garnitures*, and to form with other vegetables *ragoûts* called *jardinière*, and in order to have them all the year round for this purpose they can be preserved by the following process : Having “trimmed” them as above, boil them as for present dressing, but for five or ten minutes only. Drain and dry them in a cloth, then string them on twine, which you hang up in a dry place where there is a free current of air, but out of the sun. The pieces of artichoke should not touch each other on the string. When they are thoroughly dry they can be put away, and kept like dried mushrooms in jars or paper bags. They may also be dried in the oven. It is better, when practicable, to avoid boiling artichokes in iron saucepans, and

this applies to all vegetables which contain acids, which will act upon the iron. An earthen pot or a tinned copper pan should be used, or, if you will have iron saucepans they should be lined with white enamel. The best way of boiling most vegetables is not to boil them in water at all but in steam, using a contrivance which is called, I believe, a steamer; but, as was done in the case of the gigantic turbot spoken of by Brillat Savarin, any vessel which will stand the fire can be converted into a steamer, all that is required being that the thing to be cooked should be propped up above the boiling water. Vegetables so cooked or steamed, if intended to be eaten *à la naturel* or *à l'Anglaise*, taste much better than if boiled in water. They take less time to cook, and consequently necessitate a smaller expenditure of fuel, if that be a consideration. In the case of greens, cabbages, and such like, the squeezing process is no longer necessary to free them from a superabundance of water, and this is a very great advantage for people who like their food to look nice and yet will have their cabbage plainly boiled without any further dressing. A fair sprinkling of salt should be applied to the vegetables before they are put into the steamer, or the water used to produce the steam should be plentifully salted. Pepper, spices, sweet herbs, onions, &c., can be advantageously added to the water, thereby producing a savoury steam wherewith to cook the vegetables and improve their taste.—*The Queen*.

CHOLERA: THE CAMPHOR REMEDY.

DR. S. R. HOUSE, of Waterford, formerly medical missionary to Siam, where he resided eighteen years, and had great opportunities for witnessing the ravages of the cholera, communicates to the *Troy Times* an interesting paper upon the symptoms, treatment of the disease, &c. He says that the remedy which he has learned to trust with a confidence inspired by almost uniform success, is simply the camphorated spirits of the apothecary given one drop in a teaspoonful of water, every three minutes [We recommend that the camphor be dropped on loaf sugar and taken, as much more effective than in water.] It seems to be essential to the success of camphor as a remedy that it be given as directed, in the dose of one drop at a time, diluted with the teaspoonful of water, and given in the frequent and regular intervals specified. Perhaps this minute quantity is taken up by the stomach when in its disturbed state, while a larger and more irritating, because concentrated dose, would be rejected. To specify more particularly this mode of treatment: *Imprimis*, let the camphor bottle be always on hand. On the first appearance of diarrhoea, or indeed in any stage of the disease, let say ten drops of spirits of camphor be stirred up with ten spoonfuls of cold water, till the solution becomes limpid, and one teaspoonful of this solution given faithfully and unintermittingly every three minutes by the clock, the patient meanwhile made strictly to keep the reclining position and hot bricks or bottles of hot water applied to the feet and abdomen. Should purging and vomiting not immediately cease, persevere with the remedy; in most cases, however, a genial warmth at the stomach, with a sense of returning reviving strength is speedily felt; the nausea and looseness of the bowels will cease, till as all becomes quiet again, the frequency of the dose may be gradually diminished, and the patient's consciousness will at last assure him the attack has passed away.—*American Paper*.

MANNERS.—I make it a point of morality never to find fault with another for his manners. They may be awkward or graceful, blunt or polite, polished or rustic. I care not what they are if the man means well, and acts from honest intentions without eccentricity or affectation. All men have not the advantage of good society, as it is called, to school them in all its fantastic rules and ceremonies, and if there is any standard of manners it is founded in reason and good sense, and not upon those artificial regulations. Manners, like conversation, should be extemporaneous and not studied. I always suspect the man that meets me with the same perpetual smile on his face, the same congeeing of the body, and the same premeditated shake of the hand. Give me the hearty, maybe rough, grip of the hand, the careless recognition, and, when occasion requires, the homely but welcome salutation, "How are you, my old friend?"

Poetry.

W O M A N.

SHOULD she, who shrinks from giving pain,
 Ere seek her food amongst the slain?
 Her life sustain on slaughtered brutes,
 Instead of earth's delicious fruits—
 Which have, in beauty, form, and dress,
 No rival, but her loveliness?
 Could she the sights and scenes endure
 Those men enact who flesh procure?
 First wring the kindness from her soul;—
 Let selfishness her heart control;
 Distort her pure and gentle mind,
 Then make her coarse and unrefined;
 Let love to cruelty give place;
 Her matchless attributes efface;
 Nay—fashion her throughout afresh
 Before you let her feed on flesh.—T. H. E.

WHAT DO WE LIVE FOR?

WHAT do we live for?
 To sow by all waters
 Fruit-bearing seeds of deeds for all years;
 To toil in the ranks
 With earth's sons and daughters,
 Manfully striving with doubts and fears.

 What do we live for?
 We live not to rust out,
 Slothfully standing aloof from the strife;
 A thousand times better,
 More noble to wear out,
 Battered and burned in the hot forge of life.

Correspondence.

A LECTURING TOUR.

Progressive Library, 1, Wellington Road, Camberwell, London, S.
 8th September, 1866.

Dear Sir,—I have much pleasure in informing you that I have commenced to labour in the field of Dietetic Reform from the platform. In the early part of the summer I lectured for several weeks in the towns to the south of Leeds—Morley, Birkenshaw, Gomersal, Cleckheaton, &c. My plan is to give one thorough lecture on Diet in each course, on Phrenology, Physiology, and Health. It thus comes in natural sequence, and is accepted much more readily than if I announced myself to lecture on Vegetarianism. I do not, however, keep the question in the back ground, but handle the arguments and my experience freely; so much so, indeed, that many adopt the principles of the lectures, give up late and heavy suppers, alcohol, tobacco, and take to bathing and a general change in diet and other personal habits. I have also an excellent opportunity for disposing of my Cook Book and other publications. I would say, for the encouragement of all, that there never was a time in my experience when the ear of the public was so open to the admission of Dietetic teaching as at the present time; and I would earnestly

impress on all friends of the cause and humanity the desirability of employing active means for the promotion of our movement. On Monday I commence lectures for the season by going to Eastbourne for a week, where an earnest and devoted friend of physical reform has kindly facilitated my arrangements. If those who have leisure and the heart to do a little would afford me the same co-operation in other places, it would give them agreeable exercise, and aid the work very much. I shall be glad to forward one of my programmes to any friend who may apply for it.—With much respect and best wishes, believe me, yours very truly,

J. BURNS.

VACCINATION : IS IT USEFUL ?

“The sooner it is understood that vaccination is not an absolute protection against smallpox the better.”
Lancet, July 23, 1866.

Dear Sir,—Possibly there may be some persons of the present generation who are so far behind in scientific knowledge as to look upon the above utterance as premature; but there are others who, being acquainted with the history of the introduction of the practice referred to and the early demonstration of the fallacy of Jenner's theory, who may think that if the faculty had pronounced against it years ago the deaths from phthisis might not have been so numerous. But better late than never; and it is to be hoped that, it having been proved that indiscriminate vaccination is productive of so much mischief, the time is not far distant when the aid afforded by government will be withheld. According to the judgment of some well-informed persons the idol will soon fall, and another item will be added to the list of vulgar errors. I append my circular letter to the members and supporters of the Anti-Vaccination League, and remain, yours truly,

1, South-place, Finsbury, Sept. 14, 1866.

RICHARD B. GIBBS.

RINDERPEST.

To the Editor of Saunders's News Letter.

Sir,—Having lately enjoyed myself looking over a very pleasant book, published more than thirty years ago, “Bubbles by an Old Man,” and being myself, for some twenty years or more, one of that singular confraternity yeleft vegetarians, the accompanying paragraph, which I have taken from it, could not fail to arrest my attention; and it occurred to me that, at the present juncture, when our beef-eaters are in such a state of alarm lest the horrible infection, rinderpest, should find its way into their stomachs, and commit some of its deadly ravages there, it might not be unattended by some good effects to let them see how readily the danger may be avoided, not only without injury, but with positive benefit, if there be any truth in the significant allusion of the “Old Man” to the “gouty luxury” with which the human carnivora are so fond of stuffing themselves, some of whom might also learn a lesson that would prove conducive to their personal comfort by reading the story of the gouty gentleman in another pleasant book, which also saw the light many years ago, “Sandford and Merton.” I would like especially to direct the attention of the medical officers of our poor-law unions to this subject. If these gentlemen could be induced greatly to lessen the consumption of flesh-meat and of alcoholic liquors in our poorhouses, it would greatly lessen the poor rates, and this agreeable circumstance would be attended by still more important results—the mortality of the inmates would be greatly lessened, and their health much improved, as I have proved in the case of the Longford Union; so that, from every point of view, we see benefits likely to arise from having the attention of medical men, and also of poor-law guardians, directed to these matters.—I am, sir, yours respectfully,

JAMES HAUGHTON.

35, Eccles-street, 20th July, 1866.

“Two German tailors had been cheerfully eating a vegetable dinner—so does the Italian, who lives on maccaroni; so does the Irish labourer, who lives on potatoes; so do the French peasants, who eat little but bread; so do the millions

who subsist in India on rice—in Africa on dates—in the South Sea Islands and in the West Indies on the bread-tree and on yams; in fact, only a very small proportion of the inhabitants of this globe are carnivorous; yet in England we are so accustomed to the gouty luxury of meat, that it is now almost looked upon as a necessity; and though our poor, we must all confess, generally speaking, are religiously patient, yet as soon as the middle classes are driven from animal to vegetable diet, they carnivorously both believe and argue that they are in the world remarkable objects of distress—that their country is in distress—that ‘things cannot last;’ in short, pointing to an artificial scale of luxury, which they themselves have hung up in their own minds, or rather in their stomachs, they persist that vegetable diet is low diet—that being without roast beef is living below zero, and that molars, or teeth, for grinding the roots and fruits of the earth, must have been given to mankind in general, and to the English nation in particular—by mistake.”—*Bubbles by an Old Man*, p. 326. 1834.

Intelligence, Reports, &c.

DUBLIN: ADDRESS TO JAMES HAUGHTON, ESQ., J.P.—Last Sunday night, at the usual weekly meeting of the Cuffe Lane Total Abstinence Society, the total abstainers of the working classes of Dublin presented an address to James Haughton, Esq., J.P., as a token of their esteem and regard for him, and as a testimony of their warm appreciation of his incessant labours in the cause of teetotalism. The chair was occupied by Mr. Thomas Lawless. There were present on the platform—The Very Rev. Dr. Spratt, Surgeon Carter, J. Dwyer Healey, Thomas Wallace Russell, Robert J. Downes, J. M’Corry, J. A. Mowatt, J. P. Cahill, J. Forrest, F. M’Donnell, J. Judge, the Rev. H. Goldsmith, minister, London, &c. The band having performed some suitable airs, the chairman, in a very telling address, introduced the business of the meeting.—The Rev. Mr. Goldsmith, who was the first speaker, said that on this his first visit to Ireland, he had seen it stated in the public papers that an address would be presented there that evening to Mr. Haughton, and as all English teetotalers admired and esteemed the name and the man, he resolved to be present; and, as a teetotaler, he would not have thought his visit to Ireland complete without taking part in an Irish temperance meeting.—Mr. M’Corry then read the address to Mr. Haughton. It referred to the need for effort in the temperance cause, to the untiring labours of Mr. Haughton, who, while a Howard had visited prisons, or a Wilberforce sought to free bondsmen, had spent time and means to free his countrymen from “a slavery more debasing than any known to the Christian race.”—Mr. Haughton replied in very touching terms and with great emotion. The address was neatly got up on parchment and ornamentally engrossed, the work having been executed at the office of Mr. Carmody, 29, Upper Ormond Quay. Speeches were delivered suitable to the occasion by Mr. J. A. Mowatt and Mr. T. W. Russell. The Very Rev. Dr. Spratt concluded the proceedings at ten o’clock in a brief but very pithy address, in which he remarked that if it were necessary for him to walk from Cork to Dublin to pay any mark of respect to his dear friend, James Haughton, he would walk the whole way to do so. He knew of no man in Dublin so well entitled to such an address from the working men of the city as James Haughton, for none other was so sincere a friend of the working classes. Dr. Spratt having administered the pledge to a large number of persons present, the proceedings terminated.—*Irish Times*, Sept. 4, 1866.

NORTH WALES.—We are happy to welcome a young and ardent fellow labourer, who has recently made his first public appearance in Wales, and from whose future services we have great hopes of good results. The subjoined report appeared in the *North Wales Chronicle* of August 18th:—“Two lectures were given in the Town Hall on Thursday and Friday evenings last by Mr. John F. Morgan; one on the ‘Importance of the Temperance Enterprise,’ and the other on ‘Vegetarianism; its adaptability to the human system.’ The Rev. Thomas Owen, Methodist preacher, and the Rev. D. Charles, Baptist preacher, took the chair respectively. The first evening the young lecturer dwelt forcibly on the evils of intemperance, as seen in many ways in waste of money, loss of health and strength, sacrifice of home comforts and happiness, loss of reason, and last, the loss of the soul, which he proved by instances of almost every-day occurrence, quoting suitable passages from the writings and speeches of several eminent and renowned men. These he interspersed with recitations, admirably rendered, such as

the 'Bridge of Sighs,' by Thomas Hood, the 'Drunkard's Wife,' &c.; and in concluding, the lecturer impressed upon his audience the value of individual example in the noble temperance enterprise, dwelling strongly upon the duty of professing Christians in regard to their weaker brethren. The next evening he treated on the subject of Vegetarianism, which he maintained was no new system. He said that Pythagoras, who lived 500 years B.C., was the founder of the first Vegetarian society. The lecturer also alluded to the extensive practice amongst philosophers and eminent men, and quoted the opinions of Linnæus, Professors Owen and Liebig, proving that fruits and farinacea are the proper food of man. He also maintained that a vegetable diet was the original dietetic command of God. Alluding to the experience of Vegetarians, he said there were 38 members of the Vegetarian Society who had never tasted animal food, and 20 abstinents from flesh over 45 years. The lectures were very well attended on both occasions, and all seemed struck at the remarkably clever manner in which the lecturer got through his task, he being so self-possessed, and really seemed quite at home in the work."

It came out during the hearing of a nuisance summons in London yesterday (Tuesday) that the defendant habitually fed his hogs on *the poultices used in London hospitals*, for which poultices he had two or three contracts running. [We hope that the Worcester guardians feed their pigs with other fare; and that this disclosure will not have the effect of spoiling their market, and compelling them to give the pork to the inmates.]—*Worcester Chronicle*, August 15, 1866.

Reviews and Notices of Books.

LADIES' MEDICAL COLLEGE.

WE have received from the Female Medical Society, 4, Fitzroy Square, London, a number of valuable and interesting documents, including the Report presented and adopted at the General Meeting, 1865, and proceedings of the meeting, the Marquis of Townshend in the Chair.—The Introductory Address delivered for the Female Medical Society, October 2nd, 1865, by James Edmunds, Esq., M.D., Lecturer on Medical Science to the Female Medical Society.—The Inaugural Address, delivered for the same society, in 1864, by Dr. Edmunds, at the Hanover Square Rooms.—Female Physicians: by Samuel Gregory, A.M., M.D., Boston, U.S.—Had our space permitted, we should have gladly given an extended notice of these documents, issued by the Female Medical Society, whose excellent aims we cordially appreciate. The Society is formed for "Promoting the proper Education and Employment of superior Women in the Practice of Midwifery, and the Treatment of the Diseases of Women and Children." Dr. James Edmunds, 4, Fitzroy Square, is Honorary Secretary, to whom any communications can be forwarded. Any of our readers feeling interested in the object of the Society, had better write to Dr. Edmunds, who will gladly afford information and send documents.

Vivisection: Is it Necessary or Justifiable? Two Prize Essays. London: Hardwicke and Co., 192, Piccadilly.

THIS is a pamphlet of near 120 pp., being two prize essays published by the Society for the Prevention of Cruelty to Animals: of which, the one by G. Fleming, Esq., F.R.G.S., F.A.S.L., &c., occupies, with its appendix, 82 pp., and won the prize; the second by W. O. Markham, M.D., &c., had a second prize awarded on account of its excellence. Our present notice refers only to the former of the two. The writer first commends the objects pursued by the society which offered the prize and describes his subject in the following terms:—

"Vivisection, the term employed in learned speech to designate the unhappy fashion of cutting up or dissecting live animals, is one of the foulest blots existing upon our relations with the highest, the most affectionate, and the most useful of the entire creation confided to man. Defying the law in this and other countries, it may be pursued to an indefinite length by the veriest tyro of science, without incurring more than the disapprobation or remonstrance of the kind-hearted. Truly the mutilation of sentient beings, for the purposes of experiment or demonstration, deserves more than the reprobation of the humane, and much requires the surveillance of the law. It sadly mars the dignity and the poetry of science, whose base, founded upon truth, relies for its beauty and its attractiveness on the gentler sympathies it calls forth, while teaching us 'to look through nature up to nature's God,' but not with the eyes or hearts of votaries who torture and massacre the helpless."

What is true of science is equally true of religion, and if both these combined gave us such teaching we should have further progress than the writer here pleads for in the direction of humanity.

The first proposition investigated is of considerable interest—"Is vivisection necessary or justifiable when performed (as at certain veterinary schools) for the purpose of giving dexterity to the operators?" How it is performed is shown on pp. 8 and 9:—

"From six o'clock in the morning until three or four in the afternoon, is occupied in completing this long and dreary list of operations. Those performed while the horse is maintained in a standing position, and by means of restraint are chiefly as follows: Bleeding from all the more important superficial veins which are accessible on the head, neck, body and limbs. Each student bleeds from the jugulars on both sides of the neck, so that these two vessels alone receive eight or more incisions. Setons of various lengths, from a few inches to upwards of two feet, are inserted over the body, and in situations in which they may or may not be usually employed in legitimate practice. Nicking and docking the tail. Opening the oesophagus. Cutting down upon and opening the trachea. Puncturing and ligaturing the carotid and other arteries. Perforating the chest and abdomen, as in the operation of tapping for the withdrawal of fluid from these cavities. Removing the ovaries in the female; and exposing the ureters or canals which lead from the kidneys to the bladder. When all these and perhaps more have been accomplished the exhausted animal is thrown down and secured, and the next series of operations are gone through on it. These are—trephining the frontal and maxillary sinuses of his head. Castration, if a stallion (and they are numerous in France). Penetrating the bladder or urethra. Amputation of the penis. Puncturing the cornea of each eye. Cauterising with the firing iron every part of the body which may ever be supposed to require that painful and last resource; for example, long and deep lines along the course of the spine, the shoulders, the quarters, over the articulations, the whole of the limbs, &c. Division of the nerves of sensation in each leg. Removal of the lateral cartilages of the foot. Tearing away the soles of the foot with pincers. Drawing off pieces of the hoof. Amputation of the ears; and often, to finish up with, tenotomy, or division of the flexor tendons of all the limbs. Other minor operations are, of course, not forgotten in this awful programme; but I have only mentioned those which seem to be most worthy of notice, without seeking to magnify the horrible detail."

It scarcely needs an argument to persons unfamiliar with such scenes and possessed of ordinary feeling to secure a negative answer to the proposition, but the writer urges that the principal object of the profession, viz., the prevention of the suffering, or its alleviation, is opposed to such practices, and he very properly inquires whether such a course of instruction will not blunt the feelings of the operators and give them an unwholesome indifference to suffering, and as

The Being that is in the clouds and air,
That is in the green leaves among the groves,
Maintains a deep and reverential care
For the offending creatures whom he loves.

An eye-witness relates that he saw an evidence of such callousness at the infamous French school at Alfont, where a student was firing a horse's nose with great *sang froid*, as he said, for pastime. The same writer gives some further information regarding that institution, where six horses are operated on twice each week. Sixty-four operations are performed on each horse, and four or five horses generally die before half the operations are concluded, and as it takes nearly two days to go through the list, the remaining one or two poor animals are left alive, half mangled, till the morning, then only to be subjected to additional tortures. Well might another witness say,—“after a few seconds I grew absolutely sick and hastened away from this abode of cruelty.” It is also shown that English surgeons do not gain expertness in this manner, yet stand high in the profession.

The second proposition discussed is—"Is vivisection necessary or justifiable for the general purposes of science; and if so, under what limitations?" This is altogether another question and in no way depends upon the answer to the former proposition. In considering it, the writer also deals with what is *called* science, but might more correctly be called brutality. The following instances are indicative:—

"‘I inspired,’ says Dr. Brachet, ‘a dog with a great aversion of me by plaguing or inflicting some pain or other upon it as often as I saw it. When this feeling was carried to its height, so that the animal became furious as soon as it saw and heard me, I put out its eyes. I could then appear before it without its manifesting any aversion. I spoke, and immediately its barkings and furious movements proved the passion which animated it. I destroyed the drums of its ears, and disorganised the internal ear as much as I could. When an intense inflammation had rendered him deaf, I filled up his

ears with wax. He could no longer hear at all. Then I went to its side, spoke aloud, and even caressed it without its falling into a rage—it seemed even sensible of my caresses.’ Nay Dr. Brachet repeated the same experiment upon another dog, and begs to assure us that the result was the same. And what does all this prove? Simply that if one brute has an aversion to another, it does not feel or show that aversion when it has no means of knowing that the other brute is present !”

“Magendie’s essays in this line were always characterised by great cruelty. M. Colin designates them as ‘so seductive !’ One of his many attempts was to cut out the stomach of a large dog while it was alive, and substitute in its place a bladder, which he fastened to the gullet in place of the stomach. By exciting vomiting in pouring an emetic effusion into the veins, the contents of this bladder were discharged, as from the natural organ.’”

The writer’s reply is that there is great uncertainty as to the value of alleged discoveries made by means of vivisection, of which he gives many evidences, confirmed by the opinions of great authorities. We quote one :—

“‘In a foreign review of my former papers, the results have been considered in favour of experiments on living animals. They are, on the contrary, deductions from anatomy, and I have had recourse to experiments, not to form my opinions, but to impress them on others. It must be my apology that my utmost powers of persuasion were lost while I urged my statements on the ground of observation alone.’ Again, he says, “Anatomy is already looked on with prejudice : let not its professors unnecessarily incur the censures of the humane. Experiments have never been the means of discovery, and the survey of what has been attempted of late years will prove that the opening of living animals has done more to perpetuate error than to enforce the just views taken from anatomy and the natural sciences.’”

Further, he argues that there must necessarily be great uncertainty in such observations, as far as they are used to illustrate the normal condition of men or animals, since the subjects of the experiments are at the time in such pain as to produce abnormal discharges of functions. Again, he utterly condemns as unnecessary all experiments for purposes of demonstration and conviction when the facts of the case are known.

In conclusion, we thoroughly endorse the writer’s two considerations for mercy to the lower animals :—

“‘First : Against the good effects of adding to the stores of the intellect, by experiments on animals, must be set off the hardening of the heart, which they cannot but occasion. The same principle which excludes the butcher from the jury box should make us afraid of blunting the sympathies of our young surgeons, and making them indifferent to suffering or heedless in inflicting it, by too great familiarity with the silent agonies of dumb animals. . . . It could be wished, also, that the invitations to all and sundry among the students of a college or university to imbrue their hands in innocent blood, as candidates for honours or medals, were more guarded than at present are. A premium has thus been put upon animal torture and animal murder, at the hands of the most inexperienced and the most unskilful members of the profession, which has been productive of serious evils. Students have naturally thought that, if one experiment was valuable, two experiments would be still more so, and three, six, or a dozen best of all. A kills six dogs, numbering each slaughter in italics and Roman numerals : Experiment I., Experiment II., &c. ; B kills seven, C eight, and D makes sure of the prize by killing the dozen. . . . It is time that something be done to check it, by suitable caution and advice to students ; and few things would be more effectual than the public condemnation of injudicious and needlessly cruel physiological experiments, even when these occur in essays deemed worthy of reward. The use of anæsthetics might, and should, be more resorted to by experimenters than has yet been. Our central, regulating, and examining medical bodies have much in their power in reference to this ; and owe it to the character of the profession for humanity, not to tempt young men to let desire for distinctions induce them to be thoughtlessly, much less deliberately, cruel.

“‘Secondly.—Cruelty to the lower animals is much at variance with the intellectual as the moral spirit of medicine. Its constant aim, as a science, is to learn better and better the conditions of life and health—its constant aim, as an art, to vanquish disease and death. . . . There is something as incongruous in a physiologist wantonly injuring or slaying an animal, as there would be in a sculptor turning an iconoclast, or a glass-stainer a window-breaker. . . . The fundamental law of moral responsibility, which declares that from those to whom much is given much will be required, demands from the physiologist a greater reverence for life than from his

more ignorant brethren. This obligation, I fear, is almost totally forgotten or neglected by medical men, yet if there be an established principle in medical ethics, it is one.

"Lastly, with deference, I would urge that there is an example, as well as a lesson for us in the Saviour's compassion for men. Inasmuch as we partake with the lower animals of bodies exquisitely sensitive to pain, and often agonised by it, we should be slow to torture creatures who, though not sharers of our joys, or participators in our mental agonies, can equal us in our bodily suffering. We stand by Divine appointment between God and His irresponsible subjects, and are as gods unto them. . . . They have taught a lesson of obedience to God, and He has taught us a lesson of kindness to them. We shall be worse even than the forgiven debtor, who showed no mercy to his creditor, if we wrong servants who have excelled us in faithfulness, or fail in compassion for the dumb creatures of God, which he has committed to our care.

He prayeth best who loveth best,
All things both great and small;
For the dear God who loveth us,
He made and loveth all."

We find this essay so good that we should have been glad to afford our readers a fuller glimpse of it, but failing that, we can cordially recommend them to procure the pamphlet. The society who have obtained so excellent an essay, are to be congratulated on the result of their labours; and if they can obtain the adoption of the writer's view, which we add, they will have an ample reward:

"Therefore is the subject brought to those limits - that it is in the highest degree unjustifiable to sacrifice animals, especially by torturing and causing them pain, for the mere name of advancing science; and in a minor degree, for the purpose of extending our knowledge of disease or sparing human suffering, until every other department of science which can minister to this research has been exhausted thoroughly, and in vain; and then only when there is something like certainty, not mere speculation, that the experiment will confer some significant boon upon the healing art."

Report of the Managing Committee of the House of Recovery and Fever Hospital, in Cork-Street, Dublin, &c. By HENRY KENNEDY, M.D.

In the Medical Report of this hospital we have a brief account of the treatment and results, with some comparisons and criticisms worthy of notice. The actual numbers of all the patients are given, viz.:—Remaining in hospital, April 1, 1864, 70; admitted up to 31st March, 1865, 2,086; discharged, 1,830; died, 152; in house, March, 31st, 1865, 174; deaths per cent, 7.67. The writer proceeds to congratulate his patrons upon the low death rate which, though it is not the lowest in the experience of the hospital (the rate having been in some years as low as $4\frac{1}{2}$ per cent), is yet to be considered very favourable. Our readers will remember the reports of Dr. Nicoll, of Longford Union which show a much lower rate than even $4\frac{1}{2}$ per cent, where neither animal food nor intoxicating liquors are used in the treatment, and will not be surprised at the explanation offered by Dr. Kennedy of the higher rate of mortality prevailing in London and Glasgow. He says:—

"Taken over a long series of years, and including several epidemics, it is known that the mortality in Great Britain is much higher than with us in Ireland. For whilst here it may be said to range from 9 to 12 per cent, in London and Glasgow the range is from 15 to 18 per cent. Different English writers, including Dr. Murchison, have noticed the point—one certainly of a very striking character, but by no means easy to account for. The thought cannot be entertained for a moment that it is due to any want of skill on the part of either English or Scotch physicians, and the only cause which, after a good deal of consideration of the subject, appears to me at all capable of explaining it, is the different habits of the people; and more particularly as regards their food. They use more malt drink, and much more animal food; and there can be little doubt these habits engender a state of the system very unfavourable indeed for the attack of such a disease as fever."

But we suspect they will be greatly surprised at an observation on the greater mortality among wealthy patients than among the poor.

"Before leaving the question of the rate of mortality in typhus, I would observe on the marked difference which it obtains between the wealthier and the poorer classes; being very much higher in the former than the latter. It is not too much to say that it is three times more fatal amongst the one than the other. And here, again, a difficulty meets us to explain the cause. It is more than probable that several combine to produce the result; and though the question cannot here be entered upon at any length, the following points may be adduced as bearing on the subject. It admits of

no doubt that refinement and education alter our organization in a very striking way ; and the higher these are carried the more marked the difference becomes. The nervous system in particular becomes much more sensitive, and very probably, too, the state of the blood is likewise altered. In addition, a class of food is in daily use which has, at least, a tendency to keep the system at *too high a standard of health*."

The phrase "too high a standard of health" seems to us a gross abuse of language. Why, if this were so, the rich patient would be in just as good a position to resist disease when he had been drugged and bled to a low state of health, or when fever had nearly run its course, as his poorer neighbour when he was first seized. If Dr. Kennedy had said, high living had so filled the blood with effete and poisonous matters, that the fever found allies within the system, by whose aid it triumphed, we think he would have been nearer the mark ; and it would have been consistent with facts. The report tells us that the profession in Dublin have not been led away by crude theories started in other places ; and it appears they have been equally heedless of established facts, for they adhere to the use of stimulants, *where they are required*, although their abandonment would be attended by the best results ; and they bleed and stimulate, or stimulate and bleed, according to the plan adopted by all the great observers and practical men who have adorned the profession from the time of Hippocrates (and Sangrado) onwards.

The Temperance Star.

NUMBERS 8 and 9 of the *Temperance Star* are on our table, and we are pleased to perceive they maintain at least their former brilliancy. The staff of writers is first-class, including Messrs. Haughton, Mowatt, Russell, Graham, Dr. Macalister, &c. The intelligent editor gives a varied feast and abundant, whilst the doctrine is thorough on all points. Mr. Russell stirs up the deficiencies of religious people and religious institutions, whilst Mr. Mowatt tilts at the fallacies wherewith religious people hide their defects. Again, under the head of "Holding on," we have abundant illustration of the value of perseverance and much encomium of the faithful, in the spirit of the German poet, who sang—

Hold out ! there comes an end to sorrow ;
Hope, from the dust shall conquering rise ;
The storm foretells a summer morrow ;
The cross points on to Paradise.
The Father reigneth ; cease all doubt ;
Hold on my heart ! hold in, hold out !

THE CATTLE DISEASE AND THE POOR.—As happens in all similar cases, the poor will suffer most by the cattle disease. If a few graziers and speculators are ruined in pocket, their losses will be as nothing to the disasters that will occur amongst the poor in districts where unrepresentable meat finds a market. Any one who wishes to know practically about the sources of disease among the poor of London may learn something by taking note of the sort of cattle that are driven through London on Mondays, and especially the herds that are driven eastward. If we could persuade the poor to eat good wheaten bread and pulse, and to watch for good fish at a cheap rate, and to abstain altogether from butchers' meat, we might be doing the state some service. But it is vain to hope for any radical change in the eating customs of a people through persuasive means, and we can only deplore the fact that, in spite of inspectors and penalties, immense quantities of meat quite unfit for food are converted into food daily, and hospitals, and dispensaries, and workhouse infirmaries bear testimony to their pernicious results. There is need for the utmost vigilance in our markets, and there is need also for an eye to be kept on the doings of retail dealers in all the localities of the metropolis where the humbler classes congregate.—*City Press*.

THE JAPANESE.—All the essentials of the Japanese labourer's life were and are easily obtained. The earth yields to him bountifully of her increase ; the material for his garments grows by the door, and is spun and wove by his own household ; the trees furnish him both fuel and light, and in all his hamlets the pauper and beggar are not, except pauper and beggar by profession, and not by necessity. Yet with all the plainness and simplicity of his rustic life, is not our Japanese peasant a bit of a Sybarite in his way ? His daily appetite is satiated with such food as might belong to the dwellers of Utopia. He eats remorselessly the tender bulbs of the golden lily, which spreads its sumptuous blossoms over his fields ; he dines daintily on the lotus root ; he boils his kettle with the wood of the camelia, which we coax with so much tender care to bloom under our northern skies.—*New York Tribune*.

COMI

Weight.

THE FOLLOWING ARTICLES
OF DIET

lb.		lb.
100	Turnips	11.0
"	Red Beet Root	11.0
"	Carrots	13.0
"	Potatoes	28.0
"	Butcher's Meat	36.6
"	Bread (stale)	76.0
"	Peas	84.0
"	Lentils	84.0
"	Barley-meal	84.5
"	Wheat-meal	85.5
"	Beans	86.0
"	Sago	88.0
"	Maize-meal	90.0
"	Oat-meal	91.0
"	Rice	92.4

"Grain, and other nutritious vegetables, yield us, not the carbon which protects our organs from the action of oxygen, but the heat which is essential to life, but also in the form of albumen and caseine, our blood, from which the other parts of our body are formed. The most important products of vegetation are especially abundant in the roots and seeds of grain, and of peas, beans, and lentils, and in the roots and juices of what are called vegetables. They exist, however, in all plants, without exception, and in larger or smaller quantity." Again:—"Vegetable fibrine and vegetable albumen and animal albumen, hardly differ, even in form; if these principles are wanting in the food, the nutrition of the animal is arrested; and when they are present, the nutrition of the carnivorous animal obtains in its food the very same principles on the presence of which the nutrition of the carnivora entirely depends." The next statement is very important to be remembered. "Vegetables produce in their organism, the blood of all animals, for the carnivora, in consuming the blood and flesh of the graminivora, consume, strictly speaking, only the vegetable principles which have served for the nutrition of the latter."—*Liebig*.

To Readers and Correspondents.

RECEIVED BY THE EDITORS.—M. A. B.; *London Mirror*.

LIST OF MEMBERS.—Members will please make the following corrections:—

Left.—J. Baines, Sheffield.

Removal.—Eaton Smith, removed to 3, Greenbank Terrace, Penwortham, Preston.

Add the following new Members:—J. H. Swetnam, Pawnbroker's Assistant, 2 years, Trinity-street, Hanley, Staffordshire; Egbert N. Doygett, Accountant, 7 months, 34, Stanley-street, Bristol; A. J. Appleton, Chemist's Assistant, 3 months, Attercliffe, near Sheffield; A. Erlbach, Timber Merchant's Foreman, 4 years, 1 month, 24, Pump Row, Old-street Road, E.C.

The following addresses have failed to find Members by post, and should be erased.—R. T. Clabb, Pleasant-street, Liverpool; J. Thorne, St. Mary's Place, Poplar, London; John Melton, Fountain-street, Leek, Staffordshire; E. Hillim, 20, Goose Dubb-street, Gloucester; J. T. Goddard, Jessie Cottage, Whetton, Isleworth, Middlesex; J. E. Bright, 53, Erskine-street, City Road, Hulme; E. Platt, York; G. T. Ford, 11a, Beech-street, Barbican; E. Kershaw, St. Helens; C. M. Dick, 24, Jackson-street, New Orleans.

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